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OPPORTUNITIES TO PROTECT INSTREAM FLOWS AND WETLAND USES OF WATER IN NEW HAMPSHIRE AND CONNECTICUT



Fish and Wildlife Service

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Opportunities to Protect Instream Flows and Wetland Uses of Water in Kentucky		In preparation

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OPPORTUNITIES TO PROTECT INSTREAM FLOWS AND WETLAND
USES OF WATER IN NEW HAMPSHIRE AND CONNECTICUT

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PREFACE

The National Ecology Center and its predecessor, the Western Energy and Land Use Team, have published a number of documents similar to this one in the past. Information is now available for 27 Western, Midwestern, and Southern States (list inside front cover).

The primary purpose of this series of documents is to point out the opportunities in instream flow management that currently exist under State law, so that planners and managers can anticipate development, plan appropriate programs, and evaluate the costs and benefits of certain courses of action. In addition, the reports are brief histories of the level of success of various State programs. The use of this information can result in a significant cost saving for planners and managers.

In some reports, opportunities in each State are presented in a single document, but in several publications, reports on two or more States from the same geographical region are combined. The complete list of reports in this series is displayed inside the front cover. The combinations of State reports facilitates comparison of specific programs. This is particularly useful because of the wide variety of instream flow protection programs or possibilities.

Each document has an Introduction that discusses its purpose, uses, and limitations, and a separate information table that summarizes the contents for each State. It is hoped that the research represented in these reports will provide an overview and preliminary evaluation that will help, Federal, State, or local planners and managers meet their increasingly complex responsibilities.

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INTRODUCTION

"Opportunities to Protect Instream Flows and Wetland Uses of Water in New Hampshire and Connecticut" provides the reader with a basic survey of State prerogatives and programs that may be used to protect the flowing water of these two States. Because of the interest and responsibilities of State fish and game agencies and other conservation organizations, most of the opportunities identified here are related to fish and wildlife habitat. There are many other uses considered--however, including hydroelectric power production, recreation, navigation, downstream delivery, and waste load assimilation. The purpose of this document is to illustrate methods to protect these instream and wetland values within the context of existing rules and regulations. Instream flows and wetlands are considered together because of their close interconnections in these two States.

Even though the authors paid close attention to statutes, this document is not intended as a legal reference. Rather, it is designed to be a planning tool to survey current State programs, compare approaches to instream and wetland use protection, and index a preliminary evaluation of the costs and benefits of a wide range of programs. Summary tables are provided to serve as an index to available opportunities (Tables 1 and 2).

In using this report, the reader should be aware of its purpose and limitations. First, only some of many possible opportunities are described; initiative, judgment, and creativity should be exercised in dealing with any specific situation. Second, this report should be used only as a starting point; this report should in no way be construed as a substitute for the opinion of a private attorney, attorney general, or agency counsel, and in any situation related to the acquisition of water rights, legal advice should be sought. Third, this report is neither a policy nor a decision document; it is simply a collection of opportunities that appear to be useful in a variety of situations.

A purpose of this work is to encourage cooperative and innovative thinking by all persons interested in instream flows for fish and wildlife, and watershed management including not only those in Federal, State, or local government, but also private individuals and wildlife organizations. Many talented people want to protect instream flows and wetlands; their cooperation in a variety of approaches will be necessary to solve the problem.

In order to illustrate this variety of approaches Tables 1 and 2 have been prepared as a special index to this report. These tables describe each opportunity and shows the page in the report where a particular opportunity is presented. The tables may be the most useful guides to the document because they allow the reader to quickly survey all the opportunities and focus attention only on the items of greatest interest.

Whether this report is read in full, or Tables 1 and 2 are used as guides, the opportunity descriptions themselves offer a means to quickly check the usefulness of a particular approach. Each "opportunity section" is divided into four parts: (1) a statement of general description, intended to quickly describe the opportunity and indicate the formal legal basis for the approach; (2) a background discussion that details and explains the legal or administrative basis for the opportunity, and mentions any special circumstances that might be encountered; (3) an example, where applicable (when an opportunity exists but has never been used, no example is given; usually, however, an example is provided); and (4) an evaluation that makes clear the costs and difficulties that will be encountered in implementing a given approach.

Table 1. Summary of opportunities to protect instream flows and wetlands uses of water in New Hampshire.

Title	General description	Applicable situations
Riparian Rights (see page 15)	The owner of riparian land has certain rights to use water. An owner may preserve instream uses by demanding water delivery [<u>Roberts v. Claremont Railway and Lighting Co.</u> 74 N.H. 217 (1907)].	Primarily when a land owner or group of owners are willing to sue upstream users to require them to allow flows to by-pass their property.
Groundwater (see page 17)	Prudent allocation of groundwater supplies helps preserve instream flows and wetlands [<u>Bassett v. Salisbury Manufacturing Co.</u> 28 N.H. 438 (1854)].	The Water Supply and Pollution Control Division (WSPCD) of the Department of Environmental Services (DES) is responsible for protecting groundwater values and for evaluating groundwater.
State Pollution Certification of Hydropower Projects (see page 20)	Construction of hydropower projects must be certified by the State to not obviate pollution effluent standards [22 U.S.C. 1841(a)(b)].	The DES and Public Utilities Commission (PUC) condition certification on the maintenance of instream values.
Hydropower Comprehensive Planning (see page 21)	A State may submit a comprehensive plan to the Federal Energy Regulatory Commission (FERC) for developing its rivers and streams (16 U.S.C. 803).	The Federal Power Act allows the FERC to rely on a State-supplied comprehensive plan when issuing a license.
Dams Designed For Purposes Other Than Hydropower (see page 23)	The State requires that dams be specifically authorized as meeting the public use and benefit, which include instream flow-related guidelines (NHRSA 481:7).	Any dam on a freshwater pond of 10 acres or more requires authorization from the Water Resources Division of DES.

Table 1. (Continued)

Title	General description	Applicable situations
Public and Private Conservation Agencies (see page 24)	Both State and local governments, and private groups may enter into agreements to maintain streamflows on an owner's land.	Public and private agencies may work with riparian owners to preserve flow and may acquire a permanent interest in a waterway.
Fish Obstruction Prevention (see page 26)	State protection of fish passage means that permits are required for dams that would obstruct passage (NHRSA 211:8).	A permit is required for all fish impediments. The Fish and Game Department can permit obstruction by artificially reduced flows.
Endangered Species (see page 28)	If a project would jeopardize an endangered species, its construction may be conditioned on protective measures including flow (16 USC 1531 and NHRSA 212-A:1-15).	The Fish and Game Department is to set conservation programs.
Water Pollution Control (see page 29)	Water quality-based permits are conditioned for maintenance of instream values (NHRSA 149:1-26).	A person planning to discharge waste into water bodies must obtain a permit from the WSPCD of DES.
Dredge, Fill, and Excavation of Wetlands (see page 32)	The State must certify all projects involving any type of dredge, fill, or excavation in a wetland area (NHRSA 483-A).	The Wetlands Board may condition its permit on water flow and water quality criteria.
Surface Water Alteration Permits (see page 33)	Alterations to wetlands that change the natural runoff must be approved by the Wetlands Board (NHRSA 483-A) and WS & PCD of DES (NHRSA 149:8-a).	When considering a permit to alter a bog, marsh, or swamp, the State recognizes the effects on instream flows and wetlands values.

Table 1. (Continued)

Title	General description	Applicable situations
Planning and Zoning Boards (see page 36)	Municipalities may regulate development in sensitive areas to protect wetlands and instream values through creation of land use regulation [<u>Patenaude v. Town of Meredith</u> , 118 N.H. 616 (1978)].	Ordinances may limit the number and size of buildings, population density, open space, and land uses (NHRSA 674:17).
Conservation Districts (see page 38)	Natural resource conservation districts may be formed to promote conservation; their districts influence planning and development (NHRSA 430-B).	Whenever citizens wish to conserve soil, water and related values they may form a district.
Regional Planning Commissions (see page 38)	Two or more municipalities may form a regional planning commission within a planning region as set by the Office of State Planning in order to develop plans for water use (NHRSA Chap. 36:45-53).	Planning regions have been set by the Office of State Planning. Their commissions are to prepare coordinated plans for the most appropriate use of land.
Conservation Commissions (see page 35)	A city or town may create a conservation commission to do research and coordinate activities including purchase of lands to preserve environmental values; this purchase could include lands bordering a stream segment (NHRSA 36-A:2-5).	The local governing body may create a commission that could have a wide range of options including research, inventories, recommending ordinances and purchases, and developing education programs.
Interstate Litigation (see page 40)	The State Attorney General may bring suit outside the State boundaries if persons in other States undertake activities that would damage streams inside the State (ART I, Sec 10, Clause 3, U.S. Constitution).	The Constitution grants the U.S. Supreme Court "original jurisdiction" to hear controversies between the States, thus when an adverse activity is undertaken in another State the the Attorney General may sue in the Supreme Court.

Table 1. (Concluded)

Title	General description	Applicable situations
Interstate Compacts (see page 40)	The Governor may enter into agreements with other States to control the flow of water from New Hampshire into bordering States.	New Hampshire is active in several compacts; new compacts could include instream and land use values.
Private Rights of Action (see page 41)	People and agencies may bring a nuisance abatement action against offending water users [<u>Robic v. Lillis</u> , 112 N.H. 429, 229 Atl. 2d 155 (1972)].	Whenever there is a public nuisance, persons can seek a mandatory injunction to remove the cause.

Table 2. Summary of opportunities to protect instream flows and wetlands uses of water in Connecticut.

Title	General description	Applicable situations
Riparian Rights (see page 45)	A riparian owner has the right to have the streams preserved under certain conditions [<u>Harvey Realty Co. v. Borough of Wallingford</u> , 111 Conn. 352, 150 Atl. 60].	A private right of action in the county exists for a riparian landowner to prevent unreasonable interference with streamflows.
Navigation Servitudes (see page 46)	The public owns the soil between high and low water marks on navigable streams. Individuals' rights are to be exercised with regard to this public ownership [<u>Szestowski v. Water Resources Commission</u> , 21 Conn. Supp. 407, 156 Atl.2d 197, 200 (Conn. App. 1959)].	Persons may use their land above the high water mark so long as it does not interfere with navigation. Thus an action by the State in aid of navigation does not entitle the landowner to compensation if the value of riparian property is diminished.
Statutory Controls (see page 48)	Riparian owners have certain rights to access a stream, but their rights are subject to permits issued by the Department of Environmental Protection (DEP) [CGSA Sec 22a-359 to 363 (1983)].	The State has statutory police power which may be used to protect instream flows through conditions on permits to excavate channels.
Groundwater Drilling (see page 49)	The DEP and Well Drilling Board regulate groundwater wells. DEP has authority to regulate groundwater pumping in excess of 50,000 gallons per day (CGSA Sec 22a-365 to 378).	The Board regulates the well drilling industry for public health, and maintains records on wells.
Groundwater Pollution (see page 51)	Groundwater plans and monitoring serve to protect resources from contamination [CGSA Sec 22a-122(c)(4),(5)].	Regulation of groundwater helps preserve surface water quality.

Table 2. (Continued)

Title	General description	Applicable situations
Hydropower: Pollution Certification (see page 53)	Construction of hydropower projects must be certified by the State to insure compliance with State and Federal pollution standards [33 U.S.C. 1841(a)(b)].	The Department of Environmental Protection and the Public Utilities Commission (PUC) may condition certification on maintenance of instream values.
Hydropower: Miscellaneous Permitting (see page 55)	Building a dam is a "diversion" which is a regulated activity and numerous permits are required [CGSA Sec 22a-365 to 378; CGSA Sec 22a-401 to 410].	DEP issues permits for dams and may condition the permits to protect instream and wetland values.
Non-Hydropower Dams (see page 56)	DEP must issue dam construction and repair permits before such activity may be undertaken [CGSA Sec 22a-401 to 410].	DEP issues permits for dams and may condition the permits to protect instream and wetland values.
Stream Alteration Permits (see page 59)	The DEP has the authority to issue permits for encroachments including diversions (CGSA Sec 342); see also, CGSA Secs. 22a-36 to 45, Inland Wetlands and Water Courses Act; 22a-359 to 363, Regulation of Structures/ Placement of Fill; 22a-365 to 378, Water Diversion Policy Act; 22a-383 to 390, Removal of Sand and Gravel.	A DEP stream diversion permit is required where flow is from a watershed area 100 acres or more on the 270 miles of State-designated stream channel encroachment lines, or in coastal, tidal, or navigable waters.
Inland Wetlands and Watercourses Act (see page 61)	Regulated activities in inland wetlands must be permitted by DEP or an established municipal wetland agency (CGSA Sec 22a-36 to 45).	The permits can be conditioned to protect wetland values.

Table 2. (Continued)

Title	General description	Applicable situations
Coastal Management Act (see page 62)	This act recognizes a balance between development and environmental preservation through planning, research and permits for development (CGSA Sec 22a 90 to 112).	Coastal wetland and instream values can be protected through mapping, municipal planning.
Diversion Permits as Land Use Controls (see page 64)	Permits for water diversions may be made contingent on stream flows. This could operate to limit development to those that maintain stream flows (CGSA Sec 22a-369; 373).	Rapid municipal growth depends on water supplies. DEP's diversion permit can be used to allocate surface water and groundwater to uses compatible with environmental concerns.
Fisheries Management and Refuges (see page 66)	Statute provides that fish and wildlife may be managed through protection of their habitats (CGSA Sec 26-102; 26-134; 26-141a to c).	The State designates a fish and wildlife refuge and DEP must authorize fish passage structures.
Endangered Species (see page 68)	The State endangered species statute tracks the Federal statute thus an endangered species habitat should be inviolate (CGSA Sec 26-44e).	Only six endangered species on the Federal list are in Connecticut; the list of protected species can be expected to grow as the State develops its own list.
Water Quality Permits (see page 69)	The waters of Connecticut are classified such that pollutants cannot degrade them below certain specified levels. Dilution of effluents is necessarily dependent on maintenance of streamflows (Conn. Water Quality Classifications).	By requiring that effluents discharged into Connecticut's waters comply with established standards, and by requiring that point source discharges are properly diluted, streamflows necessary to achieve such dilutions are protected.

Table 2. (Continued)

Title	General description	Applicable situations
Tidal Wetlands Development Permits (see page 71)	The DEP may regulate the development of tidal wetlands to protect tidal flows (CGSA Sec 22a-28).	The DEP must consider coastal resources and public health and welfare in the preservation of tidal wetlands.
Acquisition of Tidal Wetlands (see page 73)	The DEP may acquire tidal wetlands and the flows necessary to maintain them (CGSA Sec 26-17a(b)).	Monetary resources curtail State acquisition but private acquisitions have occurred.
Planning and Zoning Commission (see page 74)	Traditional zoning sources can limit development in sensitive areas (CGSA Sec 8-1).	Municipal zoning commissions have the authority to limit types, locations and use of structures and could protect wetlands and stream channels.
Inland Wetlands and Watercourses Commissions (see page 75)	Statute provides for commissions that could protect wetlands and and water courses (CGSA Sec 22a-42; C.A.R. Sec 22a-39 to 11).	In conformance with DEP regulations, commissions may regulate activities on designated areas.
Coastal Management Commissions (see page 76)	Statute provides for municipal coastal programs which may incorporate instream and wetland values [CGSA Sec 22a-101(a)].	Municipal coastal programs require site plan reviews by local commission aided by the DEP.
Regional Planning Agencies (see page 77)	These agencies may be formed to suggest or regulate development within a planning region. This regulation may serve to restrict development in sensitive areas Sec 8-35a).	Within a designated planning region, regional planning agencies may be empowered to make a regional plan of development. These planning agencies may also be vested with regulatory authority.

Table 2. (Concluded)

Title	General description	Applicable situations
Interstate Litigation (see page 79)	Interstate litigation may be initiated by the Attorney General to preserve Connecticut's interests, threatened by neighboring States.	Interstate litigation, as exemplified by <u>Connecticut v. Massachussetts</u> , may be used to apportion river flows between neighboring States.
Insterstate Compacts (see page 81)	Interstate compact commissions may be formed to advise or regulate areas where neighboring States have a common interest.	Interstate compact commissions have been used to preserve salmon habitat and and regulate inter-state water pollution.
Private Rights of Action (see page 82)	Legal rights provided to citizens both by common law and statute allow citizens to challenge actions detrimental to the environment.	Private and statutory rights of action may be used to challenge actions that would impair or pollute streamflows.

OPPORTUNITIES TO PROTECT INSTREAM FLOWS AND WETLAND USES OF WATER IN NEW HAMPSHIRE

by

Lynda D. Carney

INTRODUCTION

The State of New Hampshire is a land of picturesque contrasts and thriving development, supported by a network of rivers and streams. The lush Lakes Region and seacoast are ideal for water sports and hydropower, and the forested White Mountains shelter pristine streams and produce dazzling foliage in autumn, and excellent skiing in winter. The old valley towns have a serene beauty, and the newer cities bespeak economic productivity.

As a result of its many attractive qualities, New Hampshire has many visitors. It is increasing in population faster than any other State in the Northeast. In the face of subtle development pressures, hometowns are striving to maintain traditional landscapes. More residents and visitors are seeking outdoor recreation on dwindling open spaces. According to the Trust for New Hampshire Lands (Dudley Research Survey 1986), nearly 80% of New Hampshire residents now believe that a major effort to maintain the State's rivers and streams is a high priority.

This increased interest in water resource protection is reflected by a dramatic increase in the level of public and private initiative directed at more effectively managing New Hampshire rivers and streams. In 1986, the State legislature passed a bill (Chapter 202, recodified in New Hampshire Revised Statutes Annotated, hereinafter NHRSA, Chapter 21N) combining and coordinating State surface water, groundwater, air, and hazardous waste concerns into one Department of Environmental Services. The resulting changes in agency responsibilities took effect on January 2, 1987. Water laws are currently being revised by the Legislative Committee for the Recodification of New Hampshire Water Laws. The Committee's findings are to be submitted to the Legislature on January 1, 1989. In the 1987 session of the New Hampshire Legislature, bills are to be introduced to encourage local land conservation activities and State funding of land conservation.

Even as New Hampshire is increasing its emphasis on the protection of its rivers and streams, it is not doing so in a vacuum. There are already numerous opportunities in New Hampshire to protect instream flow values. Past practices and current beginnings are here identified and analyzed in light of ongoing administrative and legal structural changes.

STATE AGENCIES WITH JURISDICTION OVER SURFACE AND GROUNDWATER

State Department of Environmental Services

The New Hampshire Department of Environmental Services (DES) is the primary environmental and conservation agency in the State. Created in 1987, the DES encompasses many of the duties and powers of the formerly semiautonomous environmental agencies and boards of which it is composed (see generally NHRSA 21N).

The Water Resources Division (formerly the Water Resources Board), within the DES, is responsible for obtaining cooperation from dam owners in "the regulation of high and low water levels . . . as will best promote the public health and safety, and the enjoyment and value of public waters" (NHRSA 482:2). The Division may regulate the flow of water in streams during times of high water, and is required to maintain State-owned dams, inspect both public and private dams, and provide mechanisms for flood control.

The Water Supply and Pollution Control Division of DES (formerly the Water Supply and Pollution Control Commission) is responsible for protecting the quality of surface water and groundwater for sanitary discharges into surface water, for stormwater runoff, for drainage facilities for erosion control, for nonpoint sources of pollution, for underground oil storage facilities, etc.

The primary purpose of the Wetlands Board, also a part of DES, is to ensure that "no person shall excavate, remove, fill, dredge, or construct any structure in or on any bank, flat, marsh, or swamp in and adjacent to any waters of the state" (NHRSA 483-A:1). The Board is responsible for regulating wetlands in a way that will not adversely affect groundwater levels and stream flows (NHRSA 483-A:1-b).

The purpose of the Water Well Board, and of the Water Resources Division (WRD) of DES is "to protect the groundwater resources of the state" (NHRSA 489-B:1). The Board is responsible for promoting and encouraging "cooperation among water well contractors, pump installers, and government agencies in development and protection of records of underground water formations and resources" (NHRSA 489-B:3). The Board regulates the construction of water wells and installation of well pumps, licenses well and pump contractors, and provides well and pump records, which serve as important controls over the management of the State's water resources. Given the interrelationship between groundwater supplies and surface water flows, monitoring and control of New Hampshire's underground waters by the Water Well Board provide a valuable mechanism for protecting instream flows.

The methods used by the various divisions and boards within DES to fulfill their goals include permitting and enforcement of permit provisions, promulgation and enforcement of criteria and standards for regulated activities, and review and comment on the activities of Federal, State, and municipal agencies. The Commissioner of DES is the primary contact with the United States Environmental Protection Agency at the regional level and the environmental management departments of neighboring States (NHRSA 21-N:3). Violations of DES

requirements may be remedied through the imposition of civil penalties (fines), and the maintenance of equitable actions in courts of law, such as injunctions.

State Department of Fish and Game

The New Hampshire Department of Fish and Game has the power and authority to make and enforce rules and regulations to effectively "control, manage, restore, conserve and regulate the fish, game, bird and wildlife resources of the state" (NHRSA 206:10). The Department is responsible for ensuring that the necessary fish passage facilities are constructed and maintained at dams or obstructions (NHRSA 211:8-a) and for prohibiting the "drawing down or lowering [of] water in any stream . . . to the degree which will endanger fishlife" (NHRSA 211:11). Although its primary purpose is to protect fisheries, the Department protects streamflows by ensuring that adequate quantities of water exist to enable fish species to live.

State Department of Resources and Economic Development

The New Hampshire Department of Resources and Economic Development (DRED) has the power and authority to "protect and preserve unusual scenic, scientific, historical, recreational, and natural areas within the State" by purchase gift, sale, exchange, and agreement (NHRSA 216-A:1,2).

DRED works with the New Hampshire Outdoor Council to procure funding for the State hiking trail system and to promote fund-raising projects and educational programs for protection of public access to trails and donation of land or interests in land, many of which abut streams and rivers (NHRSA 178:2). It is responsible for an "orderly and progressive expansion of the present state park system, historic sites and wayside areas, as well as such other areas of recreational, scenic, scientific, and historical value" as the Department finds should be added to the system (NHRSA 216:A-2). DRED currently manages 6,624 acres of land adjacent to Department-owned dams and waterbodies (Implementation Plan at section 10). Funding sections such as NHRSA 216-D:4 and NHRSA 216-F:4 authorize the Department to use any funds from the United States Land and Water Conservation Fund or other Federal assistance programs.

State Public Utilities Commission--Bulk Power Supply Site Evaluation Committee

The Bulk Power Supply Site Evaluation Committee of the Public Utilities Commission is responsible for siting and long-range planning for electricity generating facilities within the State. The Committee, in deliberating on whether to issue a "certificate of site and facility" necessary to facility siting, must take into account scenic, historic, environmental, air, and water resource issues, thus allowing the incorporation of instream flow values into the certification process (see generally NHRSA 162:F).

State Attorney General

The State Attorney General represents all State agencies, including DES, in all court actions. The Attorney General is also authorized to investigate and prosecute cases involving environmental damages (NHRSA 7:186), public nuisance and other actions involving private citizens (NHRSA 7:186).

Regional and Municipal Agencies

On the local level, landowners and land occupiers may form county-wide conservation districts to address problems of water quantity, water quality, soil erosion, and other environmental issues. Regional planning commissions composed of two or more municipalities encourage the prudent development of specific areas. Municipalities are also intimately involved in the land use planning process, which has recently placed more emphasis on the need to plan development with an eye toward conserving water resources.

RIPARIAN RIGHTS AND NAVIGATIONAL SERVITUDES

Opportunity

New Hampshire has adopted and follows the doctrine of riparian rights as its basic water law; every riparian owner is limited to a reasonable use of the water in a watercourse. Under the common law doctrine of riparian rights the owner of land bordering a waterbody acquires certain rights to use the water. The landowner may make reasonable use of the water if the use does not interfere with reasonable uses by other riparian owners.

Riparian rights are subject to both State police power regulation and to the Federal Government rights under the Commerce Clause to maintain navigable waters free from obstructions--the Federal navigational servitude. Thus, any government, business, or private individual holding a riparian right may preserve instream flows by demanding that enough water be delivered downstream to support the landowners' use, or by preventing the obstruction of navigable waterways.

Background

The riparian doctrine has had relatively little statutory development in New Hampshire. Thus, court cases are the chief source of information on this subject. A riparian right is a use right that exists in an owner of land adjacent to a watercourse. A riparian owner has the right to have the water of the stream flow by or through his land in its natural manner, following its regular course and in the quantity in which it usually flows. As stated by the New Hampshire Supreme Court in the case of Taggart v. Jaffrey [75 N.H. 473 (1910)], the riparian right is

a right to the natural flow of [a] brook, not unreasonably diminished or polluted, and one of the rights of use and occupation of which the title [to land is] composed

The riparian right is not an absolute right, however. Riparian owners on a stream have a mutual and common right to make reasonable use of water in a stream. They may change or divert the course of a stream flowing through their land, as long as the stream is returned to its natural and original channel before it reaches the land of the lower owner. In the case of Roberts v. Claremont Railway and Lighting Company [74 N.H. 217 (1907)], in which the diversion of a stream by a riparian owner was challenged, the New Hampshire Supreme Court ruled as follows:

The rule that riparian owners have a right to insist that the stream shall continue to run ut currere solebat¹ . . . is subject to the limitation that the owners of the land through which it runs may divert it from its channel for any lawful use provided they do not detain the water unreasonably, do not overflow the land of the next upper proprietor, and return it to its channel above the land of the next lower proprietor in substantially the same condition as when it reached their land.

Although the early common law rule was that each riparian owner was entitled to the natural flow of a stream, undiminished in quantity or quality, the decisions discussed above essentially modified the early doctrine by permitting a reasonable use of the water of a stream.

Overlying the rights of the riparian landowner is the State's police power to regulate public waters. Where a river or stream is capable of some useful service to the public in its natural state, it is a "public river or stream" [*St. Regis Paper Co. v. New Hampshire Water Resources Board*, 92 N.H. 164, 126 Atl.2d 832 (1942)].

Public rivers and streams belong to the State in full and unrestricted title until disposed of by grant from the legislature. They are held by the State in trust for the public, but "the public right is a State right which the legislature may control, take away or cede at will" [*St. Regis*, 92 N.H. 169]. Thus, the "privilege" of a member of the public to use a public river should be distinguished from the riparian rights of a private landowner, which are "property rights" not to be invaded or taken from the owner without compensation [*St. Regis*, 92 N.H. 164].

Overlying both the rights of the riparian landowner and the State's title to public waters is the Federal navigational servitude. Under this doctrine, title of the owner of riparian land to the historical high water mark on the shore of a navigable waterway is subordinate to the public right of navigation under the Commerce Clause of the United States Constitution. A riparian owner is therefore not entitled to compensation under the Fifth Amendment "Takings Clause" when a State or Federal action undertaken in aid of navigation infringes upon his use or diminishes the value of his riparian property.

New Hampshire courts have recognized the powers of the State and the United States to regulate and control navigable waters:

Until disposed of, by grant from the Legislature of ownership of easement therein, [waters, rivers, and streams] belong to the State in full and unrestricted title It is sovereign, except insofar as its powers are limited by the state and federal constitutions

When a river or stream is capable in its natural state of some useful service to the public because of its existence as such,

¹As it was wont to run; applied to a watercourse.

it is public. Navigability is not a sole test, although an important one. [St. Regis Paper Co. v. New Hampshire Water Resources Board, 92 N.H. 164, 169, 26 Atl.2d 832, 837-38 (1942)].

Example

A leading New Hampshire decision in the development of water law, and in defining the riparian rights of competing users of water in the State of New Hampshire, is the case of Bassett v. Salisbury Manufacturing Company [28 N.H. 438 (1854)]. The Bassett case involved a dispute between a dam owner on the Powwow River in Kingston, New Hampshire, and another landowner in the same community whose swampy lands drained by natural means into the Powwow River. The swamp owner, Bassett, complained that the Salisbury Manufacturing Company milldam obstructed the natural drainage of his land into the river. During the trial, one of the issues raised was whether or not there was any watercourse on the plaintiff's lot. The court defined watercourse and also stated the general rule as to the rights of riparian proprietors:

A riparian proprietor below in general has no right to raise the water of the stream above its natural level upon the land of a riparian proprietor above Again it is admitted that it is not essential to a watercourse that the banks should be absolutely unchangeable, the flow constant, the size uniform, or the waters entirely unmixed with earth, or flowing with any fixed velocity; but the law does not and cannot fix the limits in these particulars.

Evaluation

Since all landowners whose property abuts a stream have a riparian water right, acquisition of riparian lands by individuals or government agencies is a potential method for protecting instream flows. Such lands can be purchased outright by State or local agencies. Alternatively, specific water rights can be condemned by municipalities or water districts formed by two or more towns.

Riparian owners have the right to expect that others will use a stream or river in a reasonable fashion. Various avenues of enforcement exist, including negotiation, arbitration, and filing suit in court. Agreements that can be negotiated with those who divert waters upstream of a riparian owner are often more efficient and timely than suits filed in court. Regardless of the method, however, instream flows may be preserved by obtaining riparian ownership of land.

GROUNDWATER

Opportunity

The interrelationship between groundwater supplies and surface water flows has been clearly demonstrated by modern developments in the field of hydrology. Conservation and prudent allocation of groundwater supplies are important long-term methods of preserving and enhancing instream flows.

Background

Just as New Hampshire courts have applied the reasonable use doctrine to surface waters, they have also adopted the reasonable use doctrine with respect to groundwaters. The reasonable use rule as applied to groundwater, however, is not the same as the reasonable use rule as applied to surface water.

Under the phrase "reasonable use," New Hampshire courts deciding surface water disputes have announced a theory of comparative reasonableness, but in fact impose proportional sharing with a preference for prior users. In groundwater disputes, New Hampshire courts also talk about comparative reasonableness, but in practice impose an absolute ownership standard, with two exceptions: (1) waste is prohibited, and (2) water must be used on overlying land unless it can be used (e.g., sold) elsewhere without injuring other overlying owners. Thus, a groundwater pumper may use all the water he can pump as long as it is used on overlying land without waste. There is no proportional sharing among overlying owners as there is among riparian owners on surface watercourses. Thus, in most instances the biggest pump wins (Goldfarb, W., Water Law, p. 25, 1984).

In addition to the courts, the legislature has also tried to facilitate protection of the State's groundwaters. In 1986, the legislature coordinated its efforts to protect groundwater by designing an administrative structure to combine previously fragmented strategies. As of January 2, 1987, the structure was formally integrated into the New Hampshire State government with the creation of a new Department of Environmental Services.

The Bureau of Water Management of the Water Resources Division of DES is responsible for collection and management of water resource data in conjunction with development and implementation of a water resource management program that includes management of groundwater. For example, the Bureau is responsible for locating and quantifying groundwater. The Bureau has also been delegated the duty to collect, process and store reported information for all water wells constructed in New Hampshire--about 3,500 annually (Implementation Plan to Establish the New Hampshire Department of Environmental Services, as provided by Chapter 202 of the 1986 Legis. Sess., at 23 1986 hereinafter termed Implementation Plan). The Water Well Board, established in 1985 pursuant to NHRSA, Chapter 489-B, regulates the construction of water wells, installing well pumps, licensing well and pump contractors, and providing well and pump records. Both are charged with encouraging cooperation between the public and private individuals so that State groundwater supplies can be managed efficiently.

The Water Supply and Pollution Control Division (WSPCD) of DES is responsible for protecting the quality and supply of groundwater and surface waters. Within the Division, the Bureau of Groundwater Protection was created and given special powers with respect to groundwater protection during the 1986 legislative session. The Bureau coordinates existing groundwater protection efforts in addition to providing a State focus for communication with Federal and interstate agencies. It is responsible for groundwater programs, including aquifer protection and restoration, groundwater quality definition and assessment, groundwater protection, regulation and evaluation, and groundwater program compliance and enforcement.

Example

The following case laid the foundation for New Hampshire groundwater management schemes. In Bassett v. Salisbury Manufacturing Company [28 N.H. 438 (1854)], the New Hampshire Supreme Court applied the surface water reasonable use rule to groundwaters for the first time, holding that:

The true rule is that the rights of each owner being similar, and their enjoyment dependent upon the action of other land-owners, their rights must be correlative and subject to the operation of the maximum sic utera, so that each landowner is restricted to the reasonable exercise of his own rights and a reasonable use of his own property in view of the similar rights of others.

The DES is coordinating solid and hazardous waste hydrogeological investigations and groundwater restoration programs with groundwater monitoring programs designed to protect groundwater quality (see, e.g., NHRSA 147-A and 149-M).

Evaluation

Current New Hampshire policies affecting groundwater create abundant opportunities to protect instream flows and wetland values. Riparian land-owners armed with knowledge of their rights to surface water flows and correlative rights to groundwater flows, may pursue negotiations with subsurface water users or may initiate court action to enforce reasonable use standards.

Similarly, coordination by DES of groundwater quality monitoring programs designed to detect contamination, and of groundwater quantity monitoring programs, enables the State to protect both its groundwater supplies and its surface water flows. This reduces the need to transfer water from potable supplies that have been diminished or eliminated because of contamination to unpolluted groundwater or surface water flows at another location. Groundwater protection in one basin thus serves to maintain instream flows in another.

HYDROPOWER DEVELOPMENT

Hydropower has long been an important source of energy in this water-rich State and promises to continue to be so in the future as dams continue to be built, retrofitted, and redeveloped. Currently, New Hampshire has about 3,000 dams, serving various uses. Development of hydropower projects in New Hampshire involves substantial interaction between the Federal Energy Regulatory Commission (FERC) and DES. Although FERC, with concurrence from the Army Corps of Engineers, has jurisdiction over licensing of hydropower projects on navigable streams (see 16 U.S.C. § 797), a number of State permitting and review processes must be completed and approved prior to licensing, construction, retrofitting, or redevelopment. Many of the State permits are conditioned on the maintenance of instream flows.

State Pollution Certification

Opportunity. Construction of a hydroelectric dam necessarily alters stream flows, and subsequent discharges can pose a significant threat to water quality. Stagnant waters and trapped silt that collect behind the headwall of a dam may cause nutrient buildups that result in algal blooms and eutrophication. The Federal requirement that "discharges" into navigable waters be certified by the State allows DES and the New Hampshire Public Utilities Commission (PUC) to condition certification on the maintenance of instream values.

Background. Section 401(a)(1) of the Federal Water Pollution Control Act (33 U.S.C. § 1341(a)(1)) provides that:

Any applicant for a federal license or permit to construct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the state in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable waters at the point where the discharge originates or will originate, that any such discharge will comply with the applicable provisions of [the effluent limitation requirements of the Act] No license or permit shall be granted if certification has been denied by the State.

The final sentence of this section, in conjunction with the legislative history of the section (suggesting that Congress intended that all dams be certified) compels the FERC applicant to obtain State certification before issuing a license. This provides an important mechanism for State input, since the States retain the right to set more stringent discharge requirements than those provided in the Federal act, and to force licensees to demonstrate compliance with these standards under Section 401.

The DES of New Hampshire has taken an active role in ensuring that hydroelectric projects do not unnecessarily hamper instream flows. Before DES will issue a Water Quality Certificate, permits must be obtained from the Wetlands Board if the project is to involve dredging or filling (NHRSA 483-A), from the Water Supply and Pollution Control Division if the project is to involve significant alteration of the terrain (NHRSA 149:8-a), and from the Water Resources Division for construction of the dam (NHRSA 482). Thus most, if not all, projects must obtain at least two State permits before receiving a State Water Quality Certificate, which must then be submitted to FERC. New Hampshire typically conditions certification on the maintenance of a specific flow level. The method used to determine the particular required flow depends on a variety of circumstances, though generally one of two methods is applied: (1) the 7-day average flow which has a 10% chance of occurring in any given year (referred to as the 7Q10 flow), or (2) the Aquatic Base Flow as defined by the U.S. Fish and Wildlife Service.

Enforcement mechanisms used by the State to ensure that certification conditions are met include revocation or suspension of the project's license

until such time as compliance is reestablished. This enforcement power is more pivotal than the authority granted to the States to deny certification at the outset.

Example. Among the hydropower dams for which Section 401 certification, conditioned on the preservation of instream flows, has been considered is the proposed Sewall Falls dam on the Merrimack River in Concord. After lengthy delays in licensing procedures, an agreement was reached between the Governor's Office, the New Hampshire Fish and Game Commission, and the Sewall Falls Hydroelectric Development Associates, Inc., during the spring of 1987, to preserve the free-flowing characteristics of a large portion of the Merrimack River. The agreement enables the New Hampshire Fish and Game Department to acquire ownership of the 94-acre dam site from the New Hampshire Department of Environmental Services and the lease and development rights from the developers.

The agreement charges the Fish and Game Department with the development and maintenance of a multiuse recreation area at the dam in cooperation with the City of Concord and the State Department of Parks and Recreation. Federal money will provide partial funding for the acquisition and development of the area under the Dingell-Johnson program of the U.S. Fish and Wildlife Service.

Evaluation. The Section 401 permitting process provides a number of mechanisms for States to preserve instream flows. The New Hampshire DES makes an in-depth analysis of the impacts of a project before issuing a State certificate. New Hampshire often conditions issuance of a State certificate on a requirement that the proposal include preservation of instream flows. DES may also opt to withhold certification until conditions are imposed on the licensee to provide for sufficient downstream flow to adequately assimilate existing pollution discharges. Regardless of the method of implementation, the Section 401 strategy is vital. It provides an opportunity for New Hampshire to reassert some of the control over dam licensing that has been granted to the State by Federal statute.

Comprehensive Planning

Opportunity. A State may submit a comprehensive plan to FERC for improving and developing its rivers and streams. This plan may provide for the maintenance of instream flows on many waterways. FERC may adopt all or part of such a plan in determining what conditions to place on a license (16 U.S.C. § 803).

Background. Section 10(a) of the Federal Power Act (16 U.S.C. 803(a)) provides that all licenses shall be issued on the condition that:

. . . the project adopted, including the maps, plans, and specifications, shall be such as in the judgment of the Commission will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, and for other beneficial public uses, including recreational purposes; and if necessary in order to secure such plan the Commission shall

have authority to require the modification of any project and of the plans and specifications of the project works before approval [emphasis added.]

The key phrase in this provision is "comprehensive plan." The statute provides that FERC's best judgment determines whether the project's maps and specifications are properly adapted to the comprehensive plan, but does not specify how the plan itself is to be formulated. Cases decided under this provision describe criteria to be weighed under such a plan, but no case considers the extent to which States can formulate and submit a comprehensive plan, or whether a State plan could be binding on FERC.

Example. Although a comprehensive development plan has not yet been tried in New Hampshire, studies and plans focusing on different segments of particular New Hampshire rivers and water bodies have been developed by different State agencies and private groups.

Efforts to use Section 10(a) as a means of injecting State input into the Federal licensing system have, however, been initiated by the State of Maine. Maine has submitted a comprehensive plan to FERC, titled and structured to conform to the statute. The plan provides an assessment of hydropower potential in Maine and specifies which rivers and watersheds should be developed and which should be preserved.

Several States hope to bind FERC to these plans under the theory that FERC's failure to formulate its own plan allows State and local entities to fill the void. Thus far, however, FERC denies that it is bound by Maine's plan, asserting that the "comprehensive plan" consists of whatever the agency in its sole discretion deems prudent (on a case-by-case basis). This issue has not yet been resolved, and the State of Maine is organizing a lobbying effort to amend the Federal Power Act to provide for a structured system of State input. Although the Federal Power Act has not often been amended, many States are concerned about their lack of input into FERC licensing decisions.

Evaluation. Like the strategy discussed above regarding State water quality certification, the comprehensive planning approach offers an indispensable opportunity for New Hampshire to force Federal licensing actions to conform to the policies and statutes of the State. In particular, this approach would allow State input into decisions regarding the imposition of instream flow maintenance conditions on hydroelectric licensees. Although it seems improbable that New Hampshire will be able to dictate to FERC which streams could be used for power generation, comprehensive planning could allow States to place more stringent flow rate conditions on hydroelectric facilities.

Note: Some information in this section was provided by personal communication with the following people:

F. Elkind, Sanitary Engineer, Water Quality Planning, Division of Water Supply and Pollution Control, New Hampshire Department of Environmental Services, January 13, 1987.

G. Kerr, Civil Engineer, Project Development, Division of Water Resources, New Hampshire Department of Environmental Services, December 9, 1986.

V. Knowlton, Chief Engineer, Division of Water Resources, New Hampshire Department of Environmental Services, December 9, 1986.

DAMS DESIGNED FOR PURPOSES OTHER THAN HYDROPOWER

Opportunity

Nonhydroelectric dams that are at the inlet or outlet of a natural freshwater pond of 10 acres or more must be specifically authorized by the State legislature and Water Resources Division of DES. Criteria used to determine whether proposals to erect a new dam or increase the height of an existing dam will be of "public use and benefit" (NHRSA 481:7) include a number of instream flow-related guidelines. Following construction, dam flow levels are carefully monitored and controlled to protect properties downstream. The review process can be used to modify or amend existing plans to include instream flow-related guidelines. The subsequent monitoring of streamflows can provide valuable data for compliance enforcement.

Background

New Hampshire has declared a statewide need for "conservation and distribution of water and regulation of the flow of rivers and streams" (NHRSA 481:1). To that end, the State created the Water Resources Board (as of January 1987, Water Resources Division) and declared a special public need for dams and reservoirs at strategic locations (NHRSA 481:1). Although hydro-energy production is of primary importance to the economic development of the State, dams creating reservoirs, flood control dams, and other water conservation projects that do not serve as hydroelectric production facilities have also been designed and built. They must pass safety design requirements and receive the necessary permits required for dredging and filling, for significant earth-moving activities, and for Federal, State, and local certificates.

Criteria used by the Water Resources Division to evaluate petitions for building new dams or increasing the height of existing dams include an evaluation of their effect on scenic and recreation values, fish and wildlife, natural flow of water in the stream below the dam, and any hazards to navigation, fishing, bathing, and other public uses (NHRSA 782:21). These evaluation tools can be used to support an argument for modification, amendment, or cancellation of a petition based on impairment of instream flows. Restrictions on dam operations may also be sought. Smaller dam projects may be developed by the Water Resources Division in cooperation with cities and towns. Planning participants often include the Soil Conservation Service of the United States Department of Agriculture (NHRSA 481:27).

Example

When the Water Resources Division does not consider the "public use and benefit" (NHRSA 481:7) of a project before approval, as in the case of Appeal

of Canthrop [44 Atl.2d 505 (N.H. 1982)], the Supreme Court of New Hampshire will demand that another review hearing be held by the Division. In this case, the Water Resources Board molded its consideration of public use and benefit to its approval of a dam project instead of objectively weighing the criteria before issuing its approval. By demanding that the Board hold another hearing, the Court not only insured the due process rights of the interested parties, but also required that consideration of natural resource and recreation criteria, outlined in the statute, be included in the review process.

Evaluation

The statutory criteria provide a solid foundation for imposing flow maintenance conditions on would-be developers of nonhydroelectric dams. The primary disadvantages of the criteria are that they are interpreted broadly by both the Water Resources Division and the courts and are applied on a case-by-case basis [Conway v. New Hampshire Water Resources Board, 89 N.H. 346, 199 Atl.2d (1983)]. This arrangement enables almost all projects that request approval to obtain it from the Water Resources Division. Tightening up the public use and benefit rule by incorporating streamflow standards and releases through the headgates of dams is one possible alternative to better protecting instream flows from nonhydroelectric dams. Another way to protect instream flows is to either develop new criteria or develop a modification of existing criteria by incorporating streamflow standards that might be applied to smaller impoundments.

PUBLIC AND PRIVATE CONSERVATION AGENCIES

Opportunity

When lands surrounding undeveloped streams, corridors to rivers and lakes, and forested watersheds that protect vital aquifers are set aside as natural areas, streams and rivers flowing through them can be protected from the adverse effects of impaired water flows.

Background

In response to the rapid growth in population and development that New Hampshire has experienced, a number of public and private conservation agencies have incorporated land acquisition programs into their agendas. A number of these include the preservation of lands surrounding rivers and streams as natural areas.

New Hampshire has several different State agencies dealing with different aspects of the environment that affect water flow. Two divisions within the Department of Resources and Economic Development acquire land: Parks and Recreation and Forests and Lands. They are primarily interested in acquiring land in four categories: (1) land with water frontage on, and public access to, great ponds and rivers, (2) inholdings in existing State Parks and Forests, (3) land abutting State Parks and Forests, and (4) land with unusual features such as archeological or geological features. The Department is eligible to receive Land and Water Conservation Funds for some of its acquisition projects.

The New Hampshire Fish and Game Department acquires areas of special value to fish and wildlife. Lands include access to public waters, large upland tracts, potential or existing waterfowl marsh areas, and critical habitat for threatened and endangered species. All Fish and Game lands are available for hunting, fishing, and other recreational activities not conflicting with the best interests of wildlife.

The Water Resources Division and the Water Resources Council, both within DES, acquire land, flow rights, water rights, and mill privileges. Although NHRSA 482:36 requires legislative authorization to acquire a dam or any real property, rights, or easements appurtenant thereto, the Division is authorized under NHRSA 484:4 to recommend acceptance, to the governor and council, of gifts or grants or real estate, or any interest therein, contiguous to inland public waters, rivers, or streams when it is determined to be in the public interest.

The U.S. Forest Service has acquired land within the boundaries of the White Mountain National Forest. Currently, less than 17% of New Hampshire's land base has been protected for conservation and recreation purposes in its natural state. Most of this land is in the White Mountain National Forest.

New Hampshire has ten Conservation Districts--one in each county--that assist landowners in sustaining the productivity of their land. As part of their work to protect land, the Districts accept and monitor conservation easements.

Private conservation agencies, such as the Audubon Society of New Hampshire, also encourage preservation and wise use of natural areas through land acquisition programs that include streams and rivers. This society acquires land through gift, bequest, trust, and purchase. Its priorities include acquisition of land that provides valuable wildlife habitat, especially for threatened and endangered species, migratory water birds, and other nongame species.

The Society for the Protection of New Hampshire Forests promotes the conservation and wise use of New Hampshire's natural resources and land with significant ecological, scenic, or recreational values. It owns and manages more than 18,000 acres received by gift or purchase and monitors easements on over 15,000 acres. Other private conservation agencies are the Lakes Region Conservation Trust, the Land Planning and Management Foundation, the New Hampshire Association of Conservation Commissions, The Nature Conservancy, and Local Land Trusts.

The Trust for New Hampshire Lands is a private, nonprofit organization that will be working in partnership with an official State selection committee to purchase property and development rights on land having outstanding recreational and natural resource value. Legislation requesting \$20 million for the first two years of a 5-year program for the purchase of land and development rights was acted upon during the spring of 1987. A portion of this money is to be used to provide up to 50% matching funds to towns for acquisition of land that is locally critical. All lands and development rights will be acquired through voluntary negotiations for donations, or through sales. Among the criteria included for selecting lands are areas

providing access to public rivers, ponds, and lakes. The lands will be held by appropriate State agencies and municipal governments.

Example

Richard and Elizabeth Foster have spent decades piecing together parcels around Garland Pond. The 80-acre pond is one of the few water bodies, if not the only one, in the Lakes Region that is completely undeveloped. The Fosters, knowing their situation was unique and wanting to keep the undeveloped shoreline for their children and future generations, worked with the Lakes Region Conservation Trust and Forest Society to put conservation easements on their land. The Fosters now believe their work in acquiring the land and keeping it as a bird sanctuary will insure that it remains as much a treasure in the future as it is today. No homes or docks will be built on the shores, but canoeists can reach the pond from a public road to enjoy the wildlife and scenery.

Evaluation

The primary drawback of relying on conservation agencies to protect stream flows is that their acquisition of land is subject to the discretion of private landowners to negotiate or sell. Approval by the legislature of necessary funding, whether it be by matching local efforts or by issuing bonds, presents a potential political roadblock to the acquisition of an area that may be valuable for commercial exploitation.

Once an area is set aside, however, restrictions on development within tracts and along streams and rivers provide much protection to water flow and quality. Thus, both public and private conservation agencies provide avenues for coordinated efforts by State and local governments, private citizens, and businesses in acquiring natural areas in New Hampshire.

FISHERIES AND WILDLIFE MANAGEMENT LAWS

Fish Obstructions

Opportunity. Fisheries and wildlife management laws in the State of New Hampshire present opportunities to protect fish and wildlife from man-induced changes in their habitats. These protections, such as the consideration of dam development impacts on fish and the acquisition of land for wildlife refuges, have the added benefit of maintaining the natural flow of water in streams and rivers within the designated areas, thus protecting instream flows.

Background. A permit is required by all persons who impede fish passage by means of "rack, screen, weir, or other obstruction" (NHRSA 211:8). New Hampshire makes one exception to this general rule, in that dams licensed by the Department of Energy may obstruct fish passage. The Fish and Game Department, however, has the authority to either require construction of a fishway or negotiate construction of a fish passage at existing dams. Statutory criteria for the requisite determination of need include comments made at

public hearings regarding the desirability, need, and economic value associated with the project.

A determination of need is generally not made by the Fish and Game Department, however, unless a substantial number of fish are affected. The preferred method of operation by the Fish and Game Department, and the one used most often, involves negotiating with individuals, partnerships, and corporations for the purpose of implementing fishways or fish ladders and any other matters relative to the protection, propagation, and preservation of fish.

The obstruction of fish passages by artificially reduced flows is similarly prohibited. Persons desiring to lower the level of a stream or publicly owned lake or pond to a level endangering fish life, other than in the ordinary use of an established water privilege, must notify the Department in writing at least 2 weeks in advance and allow the Department to take out the fish in the waters to be drawn down or lowered (NHRSA 211:11). In addition to the physical, tangible obstacles to fish passage (e.g., a dam), New Hampshire also prohibits less tangible potential impediments to fish passage, including thermal and chemical pollution [Appeal of Town of Hampton Falls, 498 Atl.2d 305 (1985)].

The statute does not spell out the criteria to be weighed by the Department in deciding whether a permit should be issued. In practice, the Fish and Game Department simply refuses to permit fish obstructions and works with the Water Resources Division, Water Supply and Pollution Control Division, and Wetlands Board to ensure that such violations are cured. Thus, the statute serves as a deterrent to those who would otherwise build small dams or other obstructions that completely block stream flow.

Example. The Fish and Game Department may order a fish ladder to be built on a proposed dam, or order an obstruction destroyed, on the basis of its detrimental impact to fish mobility. Both actions would provide a measure of protection to the stream itself; however, fish ladders on proposed dams are often prohibitively expensive. Thus, the imposition of such a requirement might have the additional effect of killing the project.

During 1986, a landowner with land adjacent to a small trout stream stacked about 35 boulders in a stream to make an existing pool deeper, without consulting authorities. An abutting landowner filed a complaint with the Wetlands Board alleging that the boulders unnecessarily obstructed the flow of water in the stream. The Board, however, allowed the boulders to stay because their presence created a habitat for brook trout, and they were therefore not detrimental to the stream. The Board conditioned its ruling on the seasonal maintenance of instream flows by prohibiting the landowner from piling the rocks higher than 2 feet, and requiring the landowner to remove a section of the rocks from September 30 until May 1, to enable the brook trout to move upstream to spawn. In a similar fashion, the Fish and Game Department has negotiated with owners of proposed FERC-licensed dams along the Merrimack and Connecticut Rivers to build fish ladders and fish passages.

Evaluation. Passage of this provision predated concerns over instream flows, hence, the act is used mainly as a tool to preserve fish passage. Use

of this provision to prevent a particular obstruction or to minimize planned, yet harmful, low flows, however, enhances instream flows on a particular stretch of the river.

Note: Some information in this section was provided by personal communication with:

W. Ingham, New Hampshire Department of Fish and Game, December 9, 1986.

Endangered Species

Opportunity. A proposed project that may jeopardize the continued existence or necessary habitat of an endangered or threatened species may be conditioned on the installation or implementation of protective measures. Protection of instream flows may be one of the conditions determined to be necessary to protect jeopardized species.

Background. The Federal Endangered Species Act (16 U.S.C. § 1531-42 (1976 and Supp. V. 1981)) establishes a list of fish, animal, and plant species whose numbers have been depleted to such an extent that they are considered "endangered" or "threatened."

In 1979, New Hampshire adopted the New Hampshire Endangered Species Conservation Act (NHRSA Chapter 212-A:1-15), which provides a similar degree of protection for vanishing species similar to that afforded by the Federal Act. The New Hampshire Act requires the Fish and Game Department to develop State lists of endangered and threatened species. The Department has established limitations on the taking, possession, transportation, and sale of threatened or endangered species (NHRSA 212-A:9). Other State agencies and political subdivisions of the State are forbidden to act in any manner that might interfere with or jeopardize these conservation programs; however, a municipality or region may pass laws, regulations, or ordinances intended to conserve wildlife or plants (NHRSA 212-A:8). This authority allows localities to have direct input into the degree of protection afforded endangered species and the extent to which profitable ventures can avoid compliance with these prescriptions.

The Endangered Species Conservation Act provides three major exemptions and restrictions to the protective provisions. Section 212-A:13 of the Act effects three benefits; it exempts marine and estuarine species of wildlife from control, prohibits undue interference with normal agriculture or silvicultural practices, and prohibits interference "in any way" with the siting or construction of a bulk power supply or energy facility. The original State list, approved in 1980, consisted of 6 endangered and 13 threatened species, but included only 1 aquatic species, the endangered Sunapee trout (Salvelinus alpinus). The more current, proposed list of 1987 includes 5 additional aquatic species: 2 fishes, 2 mussels, and 1 salamander, in a total list of 24 endangered and 22 threatened species.

Example. Because of their location, present endangered and threatened species in New Hampshire are protected in their natural habitats without special regulatory measures, although they continue to be closely monitored. The State has, however, purchased and leased 50 small marsh areas and 2,200 acres of upland habitat under the wildlife conservation program provided by the Act.

Evaluation. An integral part of protecting endangered species in New Hampshire is protecting the habitats in which they live. The primary avenue of protecting threatened and endangered species begins with the listing process. Only those species listed are subject to the State's Endangered Species Conservation Act. Thus, since the original 1980 list contained only one aquatic species, and the proposed 1987 list contains only five, the power of the Fish and Game Department to impose regulatory controls has been severely restricted. In addition, the legislatively sanctioned conservation programs contained in the Act have been subject to restrictive budgetary and political considerations. As a result, the ability of the Fish and Game Department to acquire land to protect threatened or endangered species habitats has also been limited. Hence, the ability of the Act to aid in the protection of instream flows has thus far been restricted, although the law has provided a framework within which to work, if the possibility of doing so arises.

Note: Some information in this section was provided by personal communication with:

H. Nethers, New Hampshire Department of Fish and Game, December 9, 1986.

WATER POLLUTION CONTROL

Opportunity

The amount of water in a stream directly affects its ability to assimilate and dilute pollutants. Thus, the opportunity exists to protect instream flows by requiring their maintenance as a condition for receiving water use permits.

Background

New Hampshire has implemented the Federal Clean Water Act by establishing a statewide permitting system for those who discharge pollutants into surface waters of the State (NHRSA Chapter 149:1-26). Any person who intends to discharge waste into waters of the State must obtain a permit from the Water Supply and Pollution Control Division of DES. A permit will be issued, subject to specified terms and conditions, if the proposed discharge will not reduce the quality of the receiving waters below a certain level dictated by the classification of the stream (NHRSA 149:8). Effluent limitations may be based on the factors that provide the most effective means to abate pollution--including the economic and technological feasibility of a project, the stream classification enacted by the legislature, the projected best use of the surface water downstream, the water quality standards set forth in the Clean

Water Act, or any other reasonable conditions that may be necessary or desirable (NHRSA 149:8). Pursuant to Chapter 149:3 and water quality standards promulgated by the New Hampshire Water Supply and Pollution Control Division, State waters are divided into four classifications:

- Class A - Potentially acceptable for water supply after disinfection; highest quality.
- Class B - Acceptable for swimming, recreation, and water supply after adequate treatment; high quality fish habitat and high aesthetic value.
- Class C - Acceptable for recreation, boating, fishing, or industrial water supply uses, with or without treatment; suitable habitat for fishes, aquatic biota, and wildlife.
- Class D - Suitable for certain industrial purposes, power, and navigation. Treated sewage, waste, and cooling water discharges are allowed into Class B, C, and D waters; however, only Class D waters are to be used for industrial purposes.

Most New Hampshire streams were originally designated Class B waters and have remained in that category. The water quality standards, however, often establish a higher level of protection than that necessary to protect the uses associated with each class of water. For example, although Class B waters are generally described as being suitable for swimming, the standards frequently require a degree of protection beyond that which would be necessary to ensure suitability for swimming. No permits may be issued that use the entire assets of the surface water.

Reclassification proceedings may be initiated by the Water Supply and Pollution Control Division or by the petition of at least 100 persons residing in the county or counties in which the surface water is located (NHRSA 149:6). Although reclassification proceedings are infrequent, when they do occur, a stream is usually upgraded from Class C to Class B. Currently there are no waters in the Class D category.

Example

In January 1982, the Public Service Company of New Hampshire (PSC), representing the owners of Seabrook Station, a nuclear-fueled electric generating station under construction in Seabrook, was granted a property tax exemption for its water pollution control facilities by the Water Supply and Pollution Control Commission. The Town of Hampton Falls challenged the decision to completely exempt the circulating water discharge tunnel from municipal real estate taxes.

In considering the Appeal of Town of Hampton Falls [498 Atl.2d 305 (1985)], the New Hampshire Supreme Court examined both the definition of pollution and the State's water classification system. "Any stream temperature increase associated with the discharge of . . . cooling water shall not be

such as to appreciably interfere with the uses assigned to [the] class" (NHRSA 143:3, II-IV, Class B Waters - Class D Waters). The criteria for water quality standards specifically included "temperature" (N.H. Admin. Rules, Ws 432.09).

The Court concluded that thermal discharge can be a source of pollution--and in fact was specifically intended to be included as a source of pollution--by both the State legislature and the Water Supply and Pollution Control Commission.

Evaluation

The key to relating waste assimilation to instream flow rates lies in the estimation of drought flow conditions in a stream. A stream with a low estimated flow rate has a correspondingly low assimilative capacity, thereby reducing the number of dischargers that can use the waterway. Conversely, if State agencies overestimate the 7Q10 base flow, an artificially high amount of waste discharge will be authorized, resulting in overuse of the stream and possible violations of water quality standards. Since dischargers cannot be held responsible if the projected flow rate of a stream exceeds the actual rate, it is the sole responsibility of the State to accurately assess stream flows before issuing a permit and to continue to adjust that estimate. In the context of preserving instream flow values, overestimated stream flow projections lead to excess use of the stream and encourage overdevelopment along its banks.

Note: Some information in this section was provided by personal communication with:

F. Elkind, Sanitary Engineer, Water Quality Planning, Division of Water Supply and Pollution Control, New Hampshire Department of Environmental Services, January 13, 1987.

WETLANDS

About 10% of the land in New Hampshire has been classified as containing poorly or very poorly drained soils [Stusse, M. Wetlands legislation in New Hampshire, 18 N.H.B.J. 265 (1977)]. A resurgence of development in the State has placed additional pressures on these fresh and saltwater wetlands.

The draining and filling of wetlands remained a priority item in New Hampshire until 1972, when the legislature repealed a special tax exemption that had been awarded to reclaimed swamp lands (NHRSA 72:14). The State now has a number of permitting and review processes that must be completed prior to dredging and filling in public waters or altering the course of a surface water area, stream, or river (principally NHRSA 483-A). Programs such as these present opportunities for Federal, State, and local agencies and private citizens to seek a more comprehensive approach to the preservation and development of wetland areas.

Dredge, Fill, and Excavation

Opportunity. All applicants for projects involving any dredging, filling, or excavation in wetland areas must obtain certification from the State through NHRSA 483-A and in some cases also through Section 401 of the Federal Clean Water Act. This requirement enables New Hampshire to consider a broad range of ecological values, including long-term preservation of instream flows and flood control, before granting permits for a particular project.

Background. A permit must be obtained from the New Hampshire Wetlands Board of the Department of Water Resources of DES, before any dredge and fill operation can be carried out on any wetland in New Hampshire, regardless of whether the water is saline or fresh (NHRSA 483-A:1; amended 1985).

Waters and adjacent areas within the State affected by NHRSA 483-A (wetlands) include:

all lands submerged or flowed by mean high tide as locally determined, and, in addition to those areas which border on tidal waters, such as, but not limited to, banks, bogs, salt marsh[es], swamps, meadows, flats or other lowlands subject to tidal action whose surface is at an elevation not exceeding 3½ ft above local mean high tide and upon which grow or are capable of growing [certain species of plants]. (NHRSA 483-A: 1-A, (Amended 1985)).

State permits incorporate a number of water flow and water quality criteria, including groundwater levels, stream channel alterations, runoff patterns, energy absorption charges, thermal exchange capabilities and sediment supplies (NH Code of Admin. Rules, Part Wt 300, and Part WT 602). The Wetlands Board may deny a petition for a permit or may require the installment or containment structures to prevent subsequent fill runoff back into waters or other protective measures (NHRSA 483-A:3, Amended 1979). For example, when considering a permit to alter a bog, marsh, or swamp, the State of New Hampshire recognizes that projects in saltwater areas can affect instream flows in the following ways (N.H. Code of Admin. Rules. Ch. Wt 602):

- increase or decrease streamflow velocities or volumes;
- redirect currents or wave energy; and
- alter runoff, absorption, infiltration, and recharge patterns, which by itself, or in conjunction with excessive withdrawal of groundwater, can lead to saltwater intrusion, contaminations, and depletion of groundwater and lowering of groundwater levels.

The general evaluation for saltwater projects therefore includes the possibility of an "unreasonable formation of shoals, bars, or other alluvial deposits caused by the alteration of currents, flows or velocities, and an unreasonable impedence or obstruction of tidal drainage channels" (N.H. Code of Admin. Rules Ch. Wt 605.01).

Violations of NHRSA 483-A can result in criminal prosecution, fines, and liability for restoration of the disturbed area (NHRSA 483-A:5, amended 1985).

Although Section 404 of the Federal Clean Water Act, as amended in 1977, is the primary means of Federal involvement in controlling the use of wetlands, it plays only a minor role in the permitting process. Nevertheless, under Section 404, persons seeking to conduct activities that would result in the discharge of dredged and fill material into "waters of the United States" must apply for and obtain a permit from the local district office of the Corps of Engineers. Among the criteria the Corps uses for evaluating permit applications in its "public interest review" (Public Law 92-500, Section 404cc) are some that directly affect instream flow--including whether "the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies, shellfish beds, and fishing areas (including spawning and breeding areas), wildlife and recreational areas" (Public Law 92-500, Section 404cc).

Example. Recent New Hampshire court decisions reflect the strong public policy incorporated in the Finding of Public Purpose in NHRSA 483-A:1-b, against the filling of wetlands and mandate careful public scrutiny of applications to fill such areas. In Claridge v. New Hampshire Wetlands Board [458 Atl.2d 287 (N.H. 1984)], the Wetlands Board rejected a request for a permit to partly fill property designated as a wetland to accommodate a septic system for a one-family dwelling. The New Hampshire Supreme Court upheld the Board's decision, ruling that the land continued to have some economic value. Hence, denial of the permit did not constitute a compensable taking in that the property was part of a "valuable ecological resource" (485 Atl.2d at 290). Fill would have irreparably diminished the property's nutrient-producing capability for coastal habitats and marine fisheries. It would have clearly posed a risk to others and harm to the public. One of the Court's primary considerations in denying the permit was the desire to avoid damage to the "ecological value" of the land in its unchanged state. A primary component of this ecological value is the water as a resource for recharge of surface water and groundwater and flood control.

Evaluation. The New Hampshire dredge and fill regulations are designed to protect and preserve the submerged lands under tidal and fresh waters and wetlands in New Hampshire from despoilation and unregulated alteration. Two of the primary ecological values that are protected are stream channel flows and groundwater levels. Instream flows may be protected by conditioning State certification on the maintenance of the ecological value of the waters in their unchanged state or the improvement of the current ecological status of a particular body of water.

Surface Water Alteration Permits

Opportunity. Alterations of the wetland terrain that involve a modification in the natural runoff of an area must be approved by the Wetlands Board or Water Supply and Pollution Control Division. Factors considered when evaluating permit applications include a number of instream flow-related guidelines, among which are the effect of dredge and fill activities on the banks and beds of streams and the resulting flow of water in wetland areas (NHRSA 149:8-a).

Background. NHRSA 149:8-a was enacted in 1967 to protect State water quality from dredging, mining, and construction activities in or adjacent to the surface waters. It was also intended to protect water quality from degradation due to "significant alterations" that impact drainage and stream-flows.

Rules were passed in 1981, requiring a "site specific" permit whenever a contiguous area of more than 100,000 square feet is disturbed, or if surface water quality is otherwise threatened.

NHRSA 149:8-a provides that:

Any person proposing to significantly alter the characteristic of the terrain, in such a manner as to impede the natural runoff or create an unnatural runoff, shall be directly responsible for the submission to the [Water Supply and Pollution Control Division of the Department of Environmental Services] of detailed plans concerning such proposal and any additional relevant information requested by the [Division], at least 30 days prior to the undertaking of such activity.

Permits are usually processed in 4 to 6 weeks. They may not be issued if sewer discharge, State subdivision, water supply, or groundwater permit issues are not resolved. When the permit is issued, it is issued only for the project presented in the plans, and only for the owner-applicant identified. Thus, any change in plan details, timing, or ownership will probably require a permit amendment.

Two types of activities are regulated under RSA 149:a. A permit must be obtained for any activity in or adjacent to surface waters that would potentially disturb the banks or inland waters of a stream. Such permits are usually obtained through joint review with the Wetlands Board. Usually these permits are issued for logging activities and other small fill or dredge projects that do not significantly disturb water quality.

The second type of activity regulated by this section occurs when a project disturbs more than 100,000 contiguous square feet of land. A significant "alteration of terrain permit" must be obtained from the Water Supply and Pollution Control Division, in addition to a Wetlands Board permit for dredge, excavation, or fill activities. The types of projects most often seeking a significant alteration of terrain permit involve residential subdivision and commercial development. This type of regulated activity may require additional permits, including State Water Resources and Highway Department permits, Federal FERC and 404 permits, and local permits. The larger land disturbance activities are granted the requisite permits, subject to appropriate terms and conditions, if it appears that the activity will not increase flood hazards, significantly damage fish or wildlife, or impair riparian rights.

Example. The unique value of wetland areas advanced by the New Hampshire regulations was of particular importance in the case of Sibson v. State [115 N.H. 124, 336 Atl.2d 239 (1975)]. The landowner in this case applied for a permit to fill a 4-acre tract of saltmarsh. In denying the permit, the New

Hampshire Supreme Court held that filling the saltmarsh would have substantially "changed the essential natural character of the land so as to use it for a purpose for which it was unsuited in its natural state and which injured the rights of others" [115 N.H. at 129-130, 336 Atl.2d at 243]. In denying the permit, the court not only protected the land in its natural state, but also one of the sources of future instream flows.

Evaluation. By considering the effect of ditching and draining on the State's wetland areas, New Hampshire has developed strong regulations that monitor and restrict alteration of its wetlands. By incorporating instream flow protection criteria, such as the effect of a project on downstream flow velocities, current directions, and runoff patterns, into its process of permitting surface water alterations, the State has developed a mechanism to directly protect a major source of water for downstream flows in its rivers and streams.

Note: Some information in this section was provided by personal communication with:

R. Flanders, Assistant Planning Director, Water Supply and Pollution Control Division, New Hampshire Department of Environmental Services, January 20, 1987.

LOCAL AND REGIONAL REGULATION AND PLANNING

Municipalities may regulate activities that affect sensitive watersheds, either through their zoning powers or their power to pass ordinances relating to specific issues. Regional planning agencies also serve to coordinate planning and development around rivers and streams, inland wetlands, and coastal areas.

Conservation Commissions

Opportunity. A city or town may create a conservation commission to conduct research and coordinate activities regarding local natural resources, and to inventory and recommend the purchase of lands with significant environmental value (NHRSA Chapter 36-A:2-5). A segment of a stream within a city or town may be bought through the combined efforts of a conservation commission and the city or town's legislative body.

Background. Conservation Commissions are advisory groups appointed by selectmen or city officials specifically organized to address environmental concerns (NHRSA 36-A:3). The Commission may conduct research into the land and water resources within its boundaries; coordinate the activities of unofficial bodies organized for similar purposes; index all open space and natural, aesthetic or ecological areas within its boundaries; recommend programs for the protection, development or better use of such areas; recommend the purchase of, or receive gifts of, unique lands; and provide environmental education through a variety of communication channels (Chapter 36-A:2-4).

Example. The Conservation Commission in the City of Concord is an example of one New Hampshire Commission that has been particularly active in the area of water resource management. Although its function is purely advisory, it has successfully supported zoning setbacks from rivers flowing through the city, as open space or ecological areas.

Evaluation. New Hampshire strongly emphasizes local and regional input into its decisional framework. Thus, although conservation commissions are advisory bodies, they have often been very effective. The strength and motivation for environmental activity often occurs at the local level. Commissions can thus work within their statutory authority to catalyze efforts to maintain stream flows within a particular area.

Commissions may evaluate land use practices that affect instream flows and make recommendations for the purchase of riparian lands or the provision of special zoning protections for streambed areas. They can also use their public information capabilities, which include advertising, preparing, printing and distributing books, maps, charts, plans, and pamphlets to educate residents on the need to preserve a particular stream or watershed and thereby increase political pressure to accomplish that goal. Although budgetary constraints enter into all governmental decisions, funding limitations are often of greater significance at the local level. The ability of the Commission to effect a particular land purchase or wage an information campaign is largely determined by the community's resources.

Planning Boards, Zoning Boards, and Regulation of Specific Issues

Opportunity. Municipalities may regulate development in sensitive areas, thereby protecting instream flows, either through zoning or through the promulgation of regulations that address specific development issues.

Background. Cities and towns in New Hampshire derive their power from the State legislature and are bound by the limits placed upon them; hence, their ordinances are consistent with the statutory law of the State [*State v. Jenkins*, 102 N.H. 545, 162 Atl.2d 613 (1960)]. Municipal planning boards consist of five to nine members (NHRSA 673:2-3). Their powers include adoption of development guidelines that have been labeled "the key element in land use regulation in New Hampshire" [*Patenaude v. Town of Meredith*, 118 N.H. 616 (1978)]. Zoning may limit the number and size of buildings, the density of population, the availability of open spaces, and the locations and uses of structures and lands within the municipal boundaries (NHRSA 674:17).

State legislative amendments to municipal planning and zoning regulations during 1981 included the power to adopt "innovative land use controls [including] environmental characteristics zoning" (NHRSA 674:21). Master Plans may include "a conservation and preservation section which may provide for the preservation, conservation, and use of natural and man-made resources." A 1986 amendment added a requirement to include a local water resources management and protection plan" (NHRSA 4:12-S, 4:12-V, and 674:2).

At the same time, however, municipalities have been afforded a wide, though not unlimited, latitude in making bylaws that generally fall into the category of health, welfare, and safety without following the provisions for

adopting zoning regulations established by former NHRSA 31:60-89 (now covered by NHRSA Ch. 673-676). Consequently, 189 of the 234 communities (80%) have adopted zoning ordinances, while the other 45 (20%) have chosen not to (New Hampshire Office of State Planning, "Status of Community Planning and Land Use Regulations in New Hampshire," November 1986). Given this broad discretion, New Hampshire cities and towns can choose to use either statutorily conferred zoning powers or general police powers to protect and maintain instream flow values.

Example. Patenaude v. Town of Meredith [118 N.H. 616, 392 Atl.2d 582 (1978)] involved a challenge to the Meredith Planning Board's denial of a subdivision plan that called for construction in a wetlands area. Evidence before the Board included uncontroverted testimony that the land was unsuitably steep and relatively inaccessible, in addition to maps that showed soil types unsuitable for development. Additional evidence indicated that significant portions of four lots were wetlands and that the entire area was a wildlife habitat. The board was concerned that the land's development would be inconsistent with the part of the town's comprehensive plan that called for the preservation of natural features and the maintenance of wildlife areas [392 Atl.2d at 584].

The Court upheld the planning board's decision, finding the decision to be reasonable and to have properly looked beyond the issue of zoning compliance in considering both the community's future need for open recreational space, and current and future fitness of the land for building purposes. An integral part of this consideration was the effect of ditching and draining on the area's surface water flows [392 Atl.2d at 585].

Setback ordinances, as well as ordinances regulating space between buildings, have generally been held to come within the general police powers of municipalities wishing to address specific issues rather than have comprehensive zoning ordinances [Piper v. Meredith, 110 N.H. 291, 266 Atl.2d 103 (1970)]. A town setback ordinance, requiring septic systems to be placed at least 125 feet from the edge of nearby waters was held to be a reasonable exercise of the general police power of municipalities in Town of Freedom v. Gillespie [120 N.H. 576, 419 Atl.2d 1090 (1980)], thereby protecting instream flows.

Evaluation. When the State legislature amended the municipal planning section of its regulations in 1983, municipalities were given until July 1, 1986 to make their master plans and zoning ordinances conform with the relevant provisions of the amendments. Many municipalities completed or updated master plans and amended their local zoning ordinances. The legislature once again amended State regulations in 1986 to require inclusion of a water management section in all future municipal plans, thus placing a greater emphasis on local and regional stewardship of the State's natural resource (NHRSA 4:12S-V). Since existing plans were exempted, however, there is no immediate incentive to readopt the municipal plans.

A water protection assistance program was established by NHRSA 4:12S-V and is to be administered by the Office of State Planning. Although the criteria for evaluating local water resources and management plans is in the process of being developed by the Office of State Planning, the program is

being designed to "encourage and assist municipalities individually, and, where appropriate, collectively to evaluate their water resources and to develop local and regional measures for the protection of both ground and surface water" (NHRSA 4:12-S). As a result, instream flows are protected, but not to the degree intended by the most recent legislative changes. In spite of this development, the town planning process provides an even more vital mechanism for local input into water resource management decisions. Thus, whether by zoning regulations or by control of specific issues, municipalities in New Hampshire have broad discretion to protect instream flows through incorporation of specific flow-related criteria.

Regional Planning Commissions

Opportunity. Regional Planning Commissions, formed by two or more municipalities in a planning region delineated by the Office of State Planning, may develop comprehensive land use plans in which they recognize the need for planned water distribution and use--decisions that may in turn influence local and statewide decisions affecting instream flows (NHRSA Chapter 36:45-53).

Background. Planning regions have been delineated by the Office of State Planning so that each municipality of the State falls within a specific region. A city or town may either join the existing commission for its particular planning region, or, if no commission exists, join with one or more other municipalities to form a new regional planning commission. Membership in a commission, however, is optional, and the Commission's role is advisory (NHRSA 36:45-46).

Regional planning commissions have been charged with the duty to "prepare a coordinated plan for the development of [its designated] region, taking into account present and future needs with a view toward encouraging the most appropriate use of the land, such as for agriculture, forestry, industry, commerce, and housing . . ." (NHRSA 36:45). With an eye toward balancing competing land uses with the "health, safety, morals, and general welfare of the region and its inhabitants" (NHRSA 36:45), commissions formulate comprehensive regional plans for development that include land uses, transportation routes and hubs, educational institutions and municipal services.

Example. Because of the size of most New Hampshire towns (less than 10,000 people), and their control of money resources (through property taxes), regional planning commissions play a significant role in determining whether instream flow considerations are incorporated into regional plans.

Evaluation. This strategy provides a promising method of providing regional input into water management decisions. To be most effective, more instream flow preservation sections should be inserted into regional plans throughout the State, with a goal of incorporating flow preservation sections in all regional plans.

Conservation Districts

Opportunity. Natural resource conservation districts may be formed to promote and coordinate conservation and development within a given county of the State. The oversight function of these districts may serve to influence

planning and development that might otherwise be inconsistent with the maintenance of instream flows.

Background. NHRSA 430-B provides for "the establishment of conservation districts . . . composed of landowners and land occupiers within the districts . . ." delineated by the boundaries of the 10 counties within the State. The primary function of these districts is to facilitate the joint effort of landowners, land occupiers, and government in carrying out measures for conservation and development that take into account soil, water, and related natural resource values while preventing damage by soil erosion, floodwater, and sediment in the district (NHRSA 430-B-1).

Example. The Rockingham Conservation District, in the southeastern portion of the State, near the Massachusetts border, has grown and developed tremendously in recent years. Historically composed of farmers with agricultural interests, the district has retained its emphasis on erosion control and land drainage, although the focus has turned toward municipal planning and development controls. The Rockingham Conservation District is actively engaged in developing and promoting a model subdivision ordinance that integrates soil variations with septic system needs by varying the size of the lot required in particular areas. This is particularly helpful in meeting the needs of the various types of landowners in a diversified county, composed of beachfront property, wetlands, and woodland streams, while at the same time working toward a comprehensive management plan that preserves the character of the land. Instream flows have been protected through the promotion of ordinances regulating setbacks and density zoning, and regulations restricting the degree of ditching and draining of wetlands that may take place in specific areas.

Evaluation. The effectiveness of conservation districts in promoting programs to protect instream flows lies less in the protection of a specific stream than in the preservation of the overall quantity of freeflowing streams. Areas of excessive soil erosion, frequent flooding, or deteriorating water quality can organize together to identify instream flow problem sources and solutions.

Note: Some information in this section was provided by personal communication with the following people:

R. Flanders, Assistant Planning Director, New Hampshire Water Supply and Pollution Control Division, New Hampshire Department of Environmental Services, January 20, 1987.

M. Keller, Principal planner, New Hampshire Office of State Planning, January 21, 1987.

M. Swope, Executive Director, New Hampshire Association of Conservation Commissions, January 22, 1987.

INTERSTATE COMPACTS

Opportunity

New Hampshire is the source of many rivers, several of which flow into other States (Connecticut, Merrimack, Androscoggin, and Saco), and its borders extend to the western banks of the Connecticut. Through the interstate compact system, the Governor may, on behalf of New Hampshire, enter into agreements with surrounding States to monitor and regulate both the flow and quality of waters leaving New Hampshire through water basin management plans. In this manner, a consistent and coordinated approach toward maintaining instream flows can be obtained on rivers crossing State boundaries.

Background

New Hampshire is actively involved in working with bordering States and the New England region to preserve both the flow of water and quality of water in interstate streams and rivers. The State is the signatory to a number of interstate compacts covering issues related to water quantity and water quality, including the Connecticut River Flood Control Compact (NHRSA 487), the Merrimack River Flood Control Compact (NHRSA 487-A), the New England Water Pollution Control Compact (NHRSA 488), the New Hampshire-Vermont Interstate Sewage and Waste Disposal Facilities Compact (NHRSA 252-B), the Northeastern Water and Related Land Resources Compact (NHRSA 489-A), and the Connecticut River Atlantic Salmon Compact (NHRSA 214).

Interstate commissions created by these compacts promote comprehensive planning of dam and reservoir projects (Connecticut River and Merrimack River Flood Control Compacts), discharges of pollutants and sewage (New England Water Pollution Control Compact and New Hampshire Vermont Interstate Sewage and Waste Disposal Facilities Compacts), coordination of water resources (Northeastern Water and Related Land Resources Compact), and management of Atlantic salmon (Connecticut River Atlantic Salmon Compact). Although compact-created interstate commissions may be given regulatory and enforcement authority over specific geographic areas and activities--as for example, the Connecticut River Atlantic Salmon Compact, in New Hampshire, Connecticut, Massachusetts, and Vermont--the role of most compact commissions is advisory. It is the responsibility of the Commission on Interstate Cooperation to advance cooperation and facilitate various forms of agreements, studies, and regulations--including the adoption of compacts, the enactment of uniform or reciprocal statutes, and the informal cooperation of governmental offices with one another (NHRSA 19).

Example

New Hampshire has entered into an interstate water basin control compact with the States of Connecticut and Vermont and the Commonwealth of Massachusetts to develop a comprehensive system of flood control and water resource use for the basin of the Connecticut River and its tributaries, which transcend the boundaries of the various member States (NHRSA Ch. 487). The Connecticut River Flood Control Compact establishes an interstate commission composed of three representatives from each of the member States. Commissioners have the power to adopt bylaws, rules, and regulations (provided they

are not inconsistent with the laws of the United States or any of the signatory States) "to assure adequate storage capacity for impounding the waters of the Connecticut River and its tributaries for the protection of life and property from floods" (NHRSA 487:a). In planning and coordinating the comprehensive system of dams and reservoirs located in the Connecticut River Valley, the Commission has integrated minimum flow criteria and fishway and fish ladder requirements into its project evaluation system.

The compact, along with the Merrimack River Flood Control Compact, keeps water upstream (in New Hampshire) behind flood control dams and provides cash from Massachusetts and Connecticut to towns in New Hampshire whose land has been flooded by the flood control dams. Thus, the compacts detain flows, in addition to maintaining them.

Evaluation

The dependent relation between upstream and downstream water users and the hydrological relation between adjacent watercourses necessitates a coordinated effort between neighboring States. Upstream users of water must preserve instream flows for subsequent downstream users, who in turn must preserve instream flows for users still further downstream. Management of the quality and quantity of instream flows along the stretch of an entire river is an integral part of an interstate compact. The compact thus provides an especially useful forum for New Hampshire and other member States to impose flow-related guidelines on projects involving upstream users.

PRIVATE RIGHTS OF ACTION

Opportunity

Both private individuals and public entities have the opportunity to protect instream flows that are affected in unusual ways or that are altered adversely by bringing a nuisance abatement action against offending water users.

Background

There are many different opportunities for private citizens and public interest groups in New Hampshire to become directly involved in bringing actions to preserve and abate obstructions to instream flows. These actions exist under both common law and statute.

Common law causes of action include both public and private nuisance, as well as actions to mitigate interferences with riparian rights. (For a discussion on riparian rights, see the preceding section of this paper entitled "Riparian Rights/Navigational Servitudes.") Additional common law causes of action exist under the emerging "public trust doctrine." (Opportunities to preserve instream flows under the public trust doctrine will be addressed in a separate section of this paper.)

Two statutorily conferred rights exist in New Hampshire. These include the right to specifically petition DES to take action to preserve or protect instream flow values (NHRSA 7:18-b), and the right to petition DES to abate a nuisance under the Fill and Dredge in Wetlands Act (NHRSA 483-A:6).

A private nuisance is "an activity which results in an unreasonable interference with the use and enjoyment of another's property" [Robie v. Lillis, 112 N.H. 429, 299 Atl.2d 155 (1972)]. A public nuisance is "an unreasonable interference with a right common to the general public; it is a behavior which unreasonably interferes with the health, safety, peace, comfort or convenience of the general community" [299 Atl.2d at 158]. Remedies for nuisance actions include mandatory injunctive relief to remove the cause of the damage and compensation for reduction in the value of land.

In Robie v. Lillis, the Court emphasized the importance of considering "the aesthetic or unaesthetic quality" of an activity in the balancing process involved in the determination of its reasonableness under all the circumstances [299 Atl.2d at 160]. Defendants in Urie v. Franconia Paper Corporation [107 N.H. 131, 218 Atl.2d 360 (1966)] were required by the Court to abate pollution caused by pulp and paper waste discharges into the Pemigewasset River. In this manner instream flows were preserved.

Example

More recently, two riparian owners along Lion Brook and two littoral owners of property on the shore of Kezar Lake brought a nuisance action against the Town of New London, which operated a sewage treatment plant that discharged nutrient-laden effluent into the brook upstream from the riparian owners. The lake developed intense algal blooms that caused the water to become "pea soup" in color, lose transparency, give off foul odors, and kill fish (which then washed onto the shore). The New Hampshire Supreme Court in Sundell v. Town of New London [409 Atl.2d 1315 (1979)] held that the private landowners could recover damages and injunctive relief for their reduced enjoyment of the lake.

Similarly, when a governmental body takes property in fact but does not formally exercise the power of eminent domain, a property owner is entitled to recover damages if the interference is "more than mere inconvenience or annoyance and sufficiently direct, sufficiently peculiar, and of sufficient magnitude to cause the court to conclude that fairness and justice, as between state and citizen, require that the burden imposed be borne by the public and not by the individual alone" [Sundell v. Town of New London, 409 Atl.2d 1315, 1318 (1979)].

Evaluation

Nuisance abatement actions provide additional protection for instream flow values when a river segment is affected in an unusual way by allowing private individuals the opportunity to initiate proceedings directed toward correcting activities not covered under regulations. Statutes, by their nature, are constructed to address the most widely applicable set of circumstances, the nuisance action injects flexibility into an otherwise rigid system by allowing private landowners as well as the general public the option of correcting a perceived inadequacy.

OPPORTUNITIES TO PROTECT INSTREAM FLOW AND WETLAND USES OF WATER IN CONNECTICUT

by

Curtis L. Michael

INTRODUCTION

One need only look at a map of Connecticut to see that it is a State blessed with abundant inland and coastal water resources. Yet, for those who would preserve the State's streamflow values, such abundance may also be a curse. Population growth and the development that such growth initiates have placed pressure on water supplies and sensitive inland and coastal wetland resources. Waterfront development is viewed by real estate developers as a lucrative enterprise. Similarly, consumers of waterfront real estate are willing to pay well for the aesthetic benefits represented by waterfront living. Although the realization of these benefits may necessitate some maintenance of streamflow, waterfront development nearly always requires dredging, filling, and shoreline reconfiguration--activities that tend to alter and degrade natural flows. Those who would seek to preserve natural environments and instream flow values thus come head-to-head with powerful market forces.

Connecticut's legislature, and the administrative authorities who implement its laws, have recognized the value of maintaining and preserving natural environments and streamflows for today's population and "generations yet unborn." Connecticut has abundant statutory authority by which streamflow values may be considered and accommodated in virtually every development decision.

Although statutory authority may be limited to a particular area--for instance, inland wetlands or coastal resources--it should be recognized that the hydrology and ecology of water resources are integrated. Thus, groundwater reduction or contamination may directly affect surface flows. Tidal wetland protection is likely to inure to the benefit of fish populations in inland rivers, and inland wetland protection may preserve river flows and ecology downstream. These considerations should be kept in mind in evaluating any opportunity discussed here. Though the opportunities tend to be limited to the legal and administrative framework specific to the water resource treated in any given statute, the benefits of their use may ripple throughout Connecticut's water resource ecology.

STATE AGENCIES WITH JURISDICTION AND AUTHORITY OVER SURFACE AND GROUNDWATER

State Department of Environmental Protection

The Connecticut Department of Environmental Protection (DEP) is the primary environmental and conservation agency in the State. The Division of Environmental Quality, within the Department, is responsible for enforcing air quality, water quality and quantity, and waste control laws, as well as for coastal zone protection. The Division of Conservation and Preservation is responsible for fisheries, forestry, parks, and wildlife.

Among the mandates of DEP, which are set out in Connecticut General Statutes Annotated (hereinafter CGSA) § 22a-2 *et seq.*, is the "protection, enhancement, and management of inland, marine, and coastal resources, including wetlands, rivers, estuaries, and shorelines" (CGSA § 22a-5(d)). Methods by which DEP may fulfill its mandate include promulgating and enforcing standards and regulations for regulated activities, issuing permits and enforcing permit provisions, and reviewing and commenting on the activities of other State and Federal agencies. The Commissioner of DEP is designated the agent of the State for entering into agreements with other State and Federal agencies (see, for example, CGSA § 22a-337). The DEP also has review, comment, and in certain instances, veto authority over actions taken by municipal and regional zoning, planning, and conservation commissions with regard to coastal resources (CGSA §§ 22a-90 through 112), inland wetlands and watercourses (CGSA § 22a-39), and stream encroachments (CGSA § 22a-348). Other powers of DEP include the preservation and acquisition of tidal wetlands (CGSA §§ 22a-28 - 35; CGSA § 26-17a) and other environmentally sensitive areas, as well as the regulation of water diversions in excess of 50,000 gallons per day (CGSA § 22a-365 - 378), and the setting of standards for the flow of water in stocked streams (CGSA § 26-141a - c).

Violations of DEP requirements may be remedied through the imposition of civil penalties (fines), and the maintenance of equitable actions in the courts, seeking injunctive relief. These actions are brought by the State Attorney General, on behalf of DEP.

State Public Utilities Control Authority--Connecticut Siting Council

The Connecticut Siting Council, within the Department of Public Utility Control, is responsible for the siting of power production and hazardous waste disposal facilities within the State. The Council, in deliberating on whether to issue a "certificate of environmental compatibility and public need," necessary before facility siting, must take into account environmental, ecological, scenic, historic, and recreational values--including water resources issues, thus allowing the incorporation of instream flow values into the certification process (see generally, CGSA § 16-50g-z).

State Attorney General

The State Attorney General represents DEP in all court actions. In addition, the Attorney General is authorized to take any necessary action to protect the State from damages due to diversion or other interference with

in-State watercourses, caused by actions out of State (CGSA § 3-126). Further, the Attorney General is the designated agent of the State to enter into agreements, contracts, and compacts regarding the use of interstate streams (CGSA § 3-127).

Connecticut Well Drilling Board

The Connecticut Well Drilling Board, in the State Department of Consumer Protection, is responsible for promoting and encouraging "cooperation among well-drillers and governmental agencies in the development and protection of records of underground water formations and resources" (CGSA § 25-128(a)). The duties of the Well Drilling Board include promulgating regulations for the well drilling industry, issuing well drilling permits, and compiling well completion reports. Well permits issued by the Board require the approval of the local sanitarian or health official, to ensure consistency with the Public Health Code. The Well Drilling Board does not, however, have statutory authority to deny or alter the location, yields, or use of the wells it permits, or to allocate the State's groundwater resources. Nonetheless, given the hydrological interrelationships between surface and groundwater, the control and inventorying of underground water resources by the Well Drilling Board serves an important function in the protection of instream flows.

Department of Health Services

The State Department of Health Services (DOHS) is vested with the authority to approve the location of public water supply sources, in cooperation with DEP (CGSA § 25-33(a) and (b)). The DOHS may therefore appear as a party in any municipal action that might affect a public water supply. In addition, DOHS is responsible for the regulation of placements of public water supply wells, including separation distances. Placements of public water supply wells and reservoirs may impact on flows in streams tributary to these reservoirs. The hydrological relationships between groundwater pumping and depletion of surface flows necessitates consideration of streamflow values in well placement and construction.

Regional and Municipal Agencies

Regional and municipal planning, zoning, and conservation agencies serve an important role in protecting water resources through traditional zoning powers, statutory permit authority, and in certain cases, the acquisition of property (see, for example, CGSA § 16-50d). Such agencies include municipal Inland Wetlands and Watercourses Commissions, municipal Coastal Area Zoning and Planning Commissions, and the regional Connecticut River Gateway Commission.

RIPARIAN RIGHTS AND NAVIGATIONAL SERVITUDES

Opportunity

In Connecticut, the rights of a landowner to the use of waters of the State are based on contiguity to those waters. These "riparian rights" must

be used in such a manner so as to avoid unreasonable impairment of the rights of both downstream and upstream riparian owners. Riparian rights are subject to State police power regulation and the Federal Government's rights under the Commerce Power to maintain navigable waters free from obstructions--the Federal navigational servitude. These concepts are articulated in the common law and in State and Federal statutes. This application prevents unreasonable use of waters by riparian landowners and prevents obstruction of navigable waterways, thereby maintaining instream flows.

Background

Common-law riparian rights. In the 1930 case of Harvey Realty Co. v. Borough of Wallingford [111 Conn. 352, 150 Atl. 60], the Supreme Court of Connecticut explained the nature of a riparian landowner.

A riparian proprietor is an owner of land bounded by a water course or lake through which a stream flows, and riparian rights can be claimed only by such owner. They are appurtenant only to lands which touch on the water course or through which it flows and which are used as a whole for a common purpose, not to any lands physically separated from the stream and land bordering on it, although belonging to the same owner.

The rights of a riparian owner are limited to a "reasonable use" of the waters, and lands appurtenant to them. Thus, it is a riparian owner's right to have the "stream preserved in its natural size, flow, and purity, without material diversion or pollution" [Harvey, 150 Atl. at 63]. What constitutes an "unreasonable use" is a question of fact [Lake Williams Beach Ass'n v. Gillman Bros. Co., 197 Conn. 134, 496 Atl.2d 182 (1985)]. Any unreasonable diversion or use to the detriment of riparian owners may be enjoined [Colleens v. New Canaan Water Co., 155 Conn. 477, 234 Atl.2d 825 (1967)]. Thus, a private right of action exists for a riparian landowner to prevent unreasonable interference with the streamflows to which he has a riparian right.

Common Law Navigational Servitudes.

In Connecticut, the public, whose representative is the state, is the owner of the soil between high and low water mark upon navigable waters where the tide ebbs and flows. The owner of the adjoining upland has certain exclusive yet qualified rights and privileges in the waters and submerged lands adjoining his upland. He has the exclusive privilege of wharfing out and erecting piers over and upon such soil and of using it for any purpose which does not interfere with navigation However, where a party's upland bordering on navigable waters adjoins and abuts the property of another, each must exercise his respective littoral rights with due regard for the corresponding rights of the other. [Szestowski v. Water Resources Commission, 21 Conn. Supp. 407, 156 Atl.2d 197, 200 (Conn. App. 1959); Rochester v. Barney, 117 Conn. 462, 468-69, 169 Atl. 45, 47 (1933)].

Thus, under court-made law, persons may use their land above the high water mark in any manner so long as it does not interfere with navigation, or interfere with the rights of adjacent landowners. These rights, like any other property rights are subject to reasonable regulation by the State, in the interest of the public welfare [Hotchkiss Grove Ass'n. v. Water Resources Comm'n, 161 Conn. 50, 282 Atl.2d 810 (1971)].

Lands below the mean high tide mark are held by the State, as trustee for the public. Any rights that an upland owner may have to lands below the mean high tide mark are mere franchises--conditional rights of use that may ripen into title through some affirmative action [Poneleit v. Dudas, 141 Conn. 413, 106 Atl.2d 479 (1954)]. If the high water mark changes, through filling, accretion, or reliction, the titles of the upland owner change correspondingly, either merging title to the newly created land with that of the upland or diminishing lands held in fee by the upland owner. Thus, the contours of the lands controlled by the State and riparian owners may change over time. Natural processes of accretion and reliction may thus impact on both State and private opportunities to protect instream flows. It should be noted that sudden avulsive changes in riparian lands will not change the contours of the titles held by riparian owners or by the State.

The Federal Government's navigational servitude overlies the rights of the riparian landowner and the State's title to the bed of the stream. Under this doctrine, title of the owner of riparian land (to the historical high water mark) on the shore of a navigable waterway is subordinate to the public right of navigation and to Congress' power to regulate navigation under the Commerce Clause of the U.S. Constitution. A riparian owner is thus not entitled to compensation under the 5th Amendment "Takings Clause" when a State or Federal action undertaken in aid of navigation infringes on his use or diminishes the value of the riparian property:

The primary use of the waters and the lands under them is for purposes of navigation, and the erection of piers in them to improve navigation for the public is entirely consistent with such use, and infringes no right on the riparian owner. Whatever the nature of the interest of the owner in the submerged lands in front of his upland bordering on public navigable waters, his title is not as full and complete as his title to fast land which has no direct connection with the navigation of such water. It is qualified title, a bare technical title, not at his absolute disposal, as his upland, but to be held at all times subordinate to such use of the submerged lands and of the waters flowing over them as may be consistent with or demanded by the public right of navigation. [Kaiser Aetna v. U.S., 444 U.S. 164, 175-76, 100 S.Ct. 383, 391 (1979), quoting Scranton v. Wheeler, 179 U.S. 141, 163, 21 S.Ct. 48, 57 (1900)].

Connecticut courts have recognized the powers of the State and the United States to regulate and control navigable waters.

When dealing with navigable waters, the right of the state or United States, and particularly the latter, to maintain full

rights of navigation are complete, and any claims to private rights in the soil underlying navigable waters are subject thereto. [Lovejoy v. Town of Darien, 131 Conn. 533, 41 Atl.2d 98, 100 (1945)].

What constitutes "navigable waters" is a question of fact. Although statutory and regulatory definitions abound [see, for example, CGSA § 15-8a (1977); 33 C.F.R. 329 (1986)], determinations of navigability generally turn on judicial interpretation of the historical use of the waterway. Thus, in Connecticut Power and Light Co. v. F.P.C. [557 F.2d 349 (2d. Cir. 1977)], the court traced back to "ancient historical" works to determine that portions of Connecticut's Housatonic River were indeed navigable. Once a waterway is found to be navigable, it remains so and may be made "non-navigable" only through an act of Congress. The Federal Government's ability to protect streamflow from obstructions that would impair navigability therefore turns on a determination of whether the stream is "navigable."

Statutory Controls on Riparian Rights. Corresponding to the State and Federal navigation rights are Connecticut statutes providing for injunctive relief against acts that would impede navigability or otherwise encroach on the public's paramount interests in access and use of navigable waterways. Examples include CGSA § 15-12, which allows a municipality to remove any illegal (non-permitted) structure that would impede access to navigable waters; CGSA § 22a-346, which allows the Commissioner of DEP to request the State Attorney General to abate any non-permitted structure within established stream encroachment lines (see "Stream Alteration Permits," in a later section of this report); local ordinances promulgated pursuant to § 22a-101(b) of the Coastal Management Act; and penalty provisions [of the Inland Wetlands and Watercourses Act (§ 22a-44)], which include the right of the DEP Commissioner to bring an action to restrain or abate violations. Dredging necessary to dig channels must also be permitted by the State DEP (CGSA § 22a-361). If the dredged materials have commercial value, further permits are required pursuant to CGSA § 22a-383. Issuance of such permits is within the discretionary police powers of the State.

The case of Shorehaven Golf Club Inc. v. Water Resources Comm'n [46 Conn. 619, 153 Atl.2d 444 (1959)] provides an example of the balance between common-law property rights of riparian landowners and statutory police power authority, and how such authority may be used to protect instream flows. Shorehaven involved an application to the State Water Resources Commission (WRC)--whose authority is now vested in the State DEP--to excavate a channel through the Great Marsh to provide deep-water access to Long Island Sound. The application was made under CGSA § 25-14 (now recodified as CGSA § 22a-386), which allowed the WRC to designate and lay out channels, subject to a permit from the U.S. Army Corps of Engineers,¹ "for the purpose of access to and from deep waters to [adjacent] uplands . . . and for improvement of coastal and inland navigation by vessels, including small craft for recreational purposes"

¹A recognition of Federal superiority regarding construction in navigable waters.

[153 Atl.2d at 446]. The WRC denied the permit application. In upholding this decision, the Court found that "the commission could properly conclude that a channel of the proportions proposed was an unreasonable exercise of the rights of the plaintiff upland owners and would require the taking of unwarranted quantities of state-owned, underwater lands for private purposes."

The court specifically pointed out that they were not denying the owners' common-law right of access to deepwater, but merely the manner by which such access was to be gained. The impairment of tidal flows, which would have resulted from the dredging activity, was prevented.

The powers vested in public agencies to prevent encroachment into navigable waters are exemplified by Hartford Electric Light Co. v. Water Resources Comm'n [162 Conn. 89, 291 Atl.2d 271 (1971)]. Hartford involved an application by the Power Company to erect power transmission lines over the Connecticut River. The State Public Utilities Commission granted the permit. However, WRC asserted its jurisdiction, claiming that its authority to control obstruction of navigable waters authorized it to require a permit before the power lines could be constructed. The Connecticut Supreme Court construed WRC's statutory authority to include obstructions "over," as well as "in," the navigable waterway. Thus, the power company was required to submit to the WRC permit process--a process in which instream flows, as well as aesthetic values, are considered.

Evaluation

The foregoing discussion depicts the balance between the rights of private riparian landowners, the State, and the Federal Government in using and protecting riparian lands and navigable waters that overlie them. This balance includes multiple opportunities for considering instream flow values. These include the ability of a riparian landowner to bring an action to enjoin or prevent unreasonable interference with his riparian rights, and the State and Federal Governments' powers to abate obstructions that would impair navigability. Indeed, maintenance of the "navigability" of navigable waters may, in large part, be synonymous with the maintenance of instream flows.

GROUNDWATER

Well Permitting

Opportunity. Regulation of well drilling by DEP, DOHS, and the Connecticut Well Drilling Board, so as to protect, preserve, and efficiently use underground aquifers, can have a positive impact on surface flows due to the hydrologic relationship between groundwater and surface flows.

Background. The Connecticut Well Drilling Board, within the Department of Consumer Protection, consists of eight members, appointed by the Governor. Duties of the Board include encouraging cooperation between well-drillers and governmental agencies in the compilation of records, and in the protection and orderly development of Connecticut's groundwater resources. The Board, in cooperation with DEP, is responsible for promulgating regulations for the well-drilling industry "with due regard for the preservation of public health,

the preservation, allocation and management of the groundwater of the state, the protection of the consuming public and the maintenance of geologic and other scientific data" (CGSA § 25-128(b)). Drilling of individual wells must be permitted by the Board, and well-drillers must submit information to the Board and DEP no more than 60 days after drilling a well.

The Board does not, however, have any authority over the location, yield, or use of the wells it permits, or for the allocation of Connecticut's groundwater resources. Locations, yield, and uses for public water supply wells are regulated by DOHS (CGSA §§ 25-33(a) and (b); 19-13-B51(a) through (m)). Allocation of the State's groundwater (and surface water) resources is primarily the responsibility of DEP, under the Connecticut Water Diversion Policy Act. This statute is discussed at length below, and in following sections.

In addition to the permitting and information collection requirements imposed by the Well Drilling Board, DEP is vested with a variety of statutory powers for inventorying and permitting uses of Connecticut's groundwater resources. Under CGSA § 22a-351, DEP is authorized to carry out a 10-year program of detailed hydrological, geological, and groundwater investigations and reports. Although the quality of information submitted by well-drillers varies, information regarding depth of bedrock, and more detailed information required for public supply wells and other large wells which must be permitted under Connecticut's Water Diversion Policy Act (CGSA § 22a-365 *et seq.* applicable to surface and groundwater diversions in excess of 50,000 gallons (see CGSA § 22a-377)), is used by DEP in the construction of computer models to evaluate the interchange between surface waters and groundwaters of the state. Through the use of such data, DEP has been able to compile preliminary groundwater inventories for virtually the entire State.

Example. The following case illustrates the hydrological interrelationship of groundwater and surface flows and how the regulation and control of groundwater diversions may be used to protect instream flows.

Colleens v. New Canaan Water Co. [155 Conn. 477, 234 Atl.2d 825 (1967)] involved a private action for injunctive relief brought by riparian landowners on the Noroton River against the water company which had drilled five wells on company-owned lands. Plaintiffs claimed that the pumping of groundwater from the water company wells seriously depleted the flow of the river, causing the river to run dry at times. The court, in sustaining plaintiffs' claims for relief, described the hydrological relationship between surface and groundwater flows.

It is the opinion that in the absence of pumping there is a static underground water level, and, if a well is placed in a water-bearing formation and water pumped out of the well, the effect is to pull the water level in the formation down from the static level . . . [T]his was happening at the defendant's wells in that water was being drawn from the river to supply the wells. The removal of the subsurface waters . . . created a more porous underlying area or what might be called hydraulic gap, which in turn caused surface waters to penetrate the

riverbed and the lagoon bottom and eventually to be drawn to the defendant's wells. [234 Atl.2d at 830].

In another instance, DEP is requiring an "impact standard" for a number of wells owned by the Manchester Water Department on streams tributary to the Hockenum River. Under this impact standard, minimum streamflows must be maintained, not through a stated amount of water released into the stream, but instead, on the basis of minimum water quantities actually measured in the stream. This impact standard is an incorporated condition of the water company's diversion permit, issued pursuant to the Connecticut Water Diversion Policy Act, passed by the Connecticut legislature to address problems recognized by the Court in the Colleens case. In order to maintain these levels in times of low flow, pumping from the wells will need to be curtailed or streamflows will need to be augmented from an upstream reservoir. Thus, volumes of groundwater pumping are directly conditioned on the maintenance of instream flows.

Evaluation. Information gained through well completion reports, which must be submitted before a well permit will be issued and which are used by DEP in evaluating the State's groundwater resources, serve as a basis for determining the interrelationship between groundwater and surface water flows. However, information is not always complete. Indeed, compliance by well-drillers with the reporting provisions of the groundwater code is often lax. Enforcement of reporting requirements is limited by lack of funding and staff. As such, the most accurate information supplied by well-drillers is the depth to bedrock. As discussed above, the more detailed and accurate information is obtained for diversions requiring a DEP diversion permit.

The promulgation of more detailed regulations applicable to well-drillers, with penalties for failure to comply, would serve to increase information flow regarding groundwater resources. In this way, the impact on groundwater depletion on instream flows may be better understood. Increased understanding provides increased opportunities for streamflow protection.

Groundwater Pollution From Solid and Hazardous Waste

Opportunity. Groundwater plans and monitoring, which have become institutionalized in Connecticut's solid and hazardous waste programs, serve to prevent contamination of underground water resources, thus protecting surface flows from such contamination as well. Streamflow benefits accrue by the avoidance of the need to tap uncontaminated water resources.

Background. Connecticut classifies its groundwaters into the following categories (Connecticut Water Quality Standards and Classification, as amended):

- Class GAA - Existing or proposed public drinking water use without treatment; may be suitable to receive discharges of domestic sewage, agricultural wastes, or backwash from public drinking water treatment systems or other minor cooling or clean water discharges.

- Class GA - May be suitable for public or private drinking water use without treatment; may be suitable to receive those discharges permitted in class GAA, and sewage or other wastes of predominately human or animal origin. These groundwaters may also receive effluents containing substances of natural origin that will easily biodegrade and pose no threat to untreated drinking water supplies.
- Class GB - May not be suitable for public or private use as drinking water without treatment; may receive discharges in classes GAA and GA, as well as treated industrial process wastes. These groundwaters are generally in areas where historical, industrial, commercial, or residential use has rendered (or is likely to render) the groundwaters unsuitable for drinking water without treatment.
- Class GC - May be suitable for certain waste disposal practices because past land use or hydrologic conditions render these groundwaters more suitable for receiving permitted discharges than for development for public or private water supply.

It is the general policy of the State of Connecticut to maintain, or restore groundwaters to Class GA, with certain exceptions (see Connecticut Water Quality Standards and Classifications, General Policy 3). To accomplish this maintenance or restoration DEP is empowered to order any person to correct any potential source of pollution to either surface or groundwater (CGSA §§ 22a-432 and 22a-449). Among the corrective measures that DEP can require is groundwater monitoring.

Connecticut's solid and hazardous waste management statutes and regulations contain numerous provisions for the protection and monitoring of groundwater near processing and disposal facilities. For instance, in siting a hazardous waste disposal facility, the Connecticut Siting Council must consider "air and water purity, including impact on present and future sources of water supply" (CGSA § 22a-122(c)(4)(F)). Regulations require consideration of "(s)ite specific hydro-geological conditions, such as the rate and direction of groundwater flow, and soil permeability" (Connecticut Agencies Regulations (CAR) § 22a-122-1(d)(2)).

Once a solid or hazardous waste facility is sited, extensive groundwater studies and monitoring must be undertaken. Monitoring plans must be submitted and approved by DEP, and groundwater and surface water samples taken pursuant to these plans must be analyzed in State-approved laboratories for contamination (see CAR §§ 22a-209-7(c)(8)(C); 22a-449(c)-28). Failure to comply with these reporting requirements may result in the imposition of civil penalties (see CAR § 22a-66-701). Further monitoring requirements are imposed for existing and new facilities for treating solid and hazardous waste pursuant to the Federal Resource Conservation and Recovery Act (see 42 U.S.C. § 6934; 40 C.F.R. § 257.4-4; 40 C.F.R. §§ 264.90 to 264.101; 40 C.F.R. §§ 265.90 to 265.94).

Groundwater monitoring plans may require compliance with regulatory schedules established by DEP (CGSA §§ 22a-432 and 449). Consultants must first be selected, and their scope of study approved by DEP. Locations of sampling wells must be approved, as must sampling variables, frequency of sampling, and analytical techniques. Once the sampling has been undertaken, reports must include "recommendations necessary to minimize or eliminate any water pollution or adverse effects on human health or the environment" Connecticut Department of Environmental Protection Order No. HM, November 20, 1986. It should be noted that compliance schedules established by DEP are used only if a company has failed to comply with the groundwater monitoring regulations discussed above.

Evaluation. Groundwater monitoring programs protect instream flows in two ways: by the obvious preservation of water quality which would otherwise be reduced or lost by groundwater contamination; and by providing the less direct benefit of preserving accrues to streamflow quantities. Whenever a groundwater aquifer is contaminated, its use as a supply of potable water is diminished or eliminated. Thus preservation by groundwater monitoring eliminates the need to tap and deplete unpolluted groundwater or surface flows elsewhere. Groundwater protection in one basin thus serves to maintain instream flows in another.

Note: Some information in this section was provided by personal communication with the following people:

C. Atkinson, Environmental Analyst, Connecticut Department of Environmental Protection, Hazardous Waste Bureau, January 22, 1987.

D. Mead, Principal Environmental Analyst, Connecticut Geological Survey, January 14, 1987.

HYDROPOWER DEVELOPMENT

Development of hydropower projects in Connecticut involves substantial interaction between the Federal Energy Regulatory Commission (FERC) and DEP. Although the licensing of hydropower projects on navigable streams is exclusively within the jurisdiction of FERC, with concurrence from the U.S. Army Corps of Engineers (see 16 U.S.C. § 797), a variety of State permits are required as well, many of which can be--and indeed are--conditioned by the maintenance of instream flows.

State Pollution Certification

Opportunity. The construction of a hydropower dam necessarily involves the alteration of streamflow, and thus the character and quality of the watercourse. Siltation and stagnation behind the headwall of a dam may result in nutrient buildup, leading to algal blooms and eutrophication (oxygen depletion resulting from the bacteriologically induced decay of dead algae). Thus, the discharge from a dam poses a significant threat to water quality, besides obviously affecting quantity. The Federal requirement that "discharges" into

navigable waters be certified by the State allows DEP to condition such certification on the maintenance of minimum streamflows.

Background. Section 401(a)(1) of the Federal Water Pollution Control Act (33 U.S.C. § 1341(a)(1)) provides that

Any applicant for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable waters at the point where the discharge will comply with the applicable provisions of [the effluent limitation requirements of the Act] . . . No license or permit shall be granted if certification has been denied by the State

To minimize the deleterious effects to water quality and flow caused by the erection of hydropower dams, Connecticut routinely requires the release of minimum flows through the headgates of dams, before the § 401 certification is issued. The minimum streamflow requirements are promulgated at CAR § 26-141a-6, and are applicable to diversions that existed prior to July 1, 1982. The amount of water to be released from the dam is calculated on the basis of a formula that takes into account the square mileage of the drainage area, its elevation, and its "safe yield." Additionally, minimum streamflows in excess of those defined under these regulations can be imposed on new diversions (after July 1, 1982) for the protection of aquatic habitat, water quality, recreational, and aesthetic values, through either the § 401 certification process, or the process of obtaining a diversion permit. Diversion permitting will be discussed in greater detail later.

Example. Scotland Dam, along the Shetucket River in Scotland, Connecticut, is among the hydropower dams for which § 401 certification has been granted, contingent on the imposition of minimum stream flow requirements. The Northeast Utilities Service Company (NUSCO) applied to FERC for a license to construct and operate the Scotland Dam. Section 401 certification by DEP was required before the license could be issued. DEP "originally denied NUSCO's Water Quality Certification request due to the lack of an instantaneous minimum stream flow release from the project. The operation of the project in this manner would have seriously affected downstream fishery resources, and therefore was considered to be inconsistent with adopted Water Quality Standards" (DEP Letter to NUSCO, March 19, 1985).

The Scotland Project as described in its license application was to be a "run-of-river" hydropower development. However, on closer inspection, DEP determined that a "more accurate description of the operational mode at Scotland would be store-and-release" ("Comment" Memorandum of DEP to FERC, 11/25/81). As such, DEP rejected NUSCO's attempt to have the project fall within a minimum stream flow exception. To resolve this problem, FERC amended the license to require a permanent instantaneous minimum streamflow release of 84 cubic feet per second.

The DEP also considers instream flows in its comments regarding competing FERC license applications. In 1984 and 1985, the Glass River Power Company and Summit Hydropower Company submitted competing license applications to FERC to construct hydropower projects on the Willimantic River. Glass River's proposal involved the use of a tailrace to return waters to the stream, an approach that would leave the streambed dry for "significant portions of the year." Summit's proposal was for a run-of-river project. The DEP rejected the Glass River application, opting to support Summit's proposal, and suggesting that a minimum stream flow of 45 cubic feet per second be maintained at all times. Such recommendations shape hydropower development decisions, allowing considerations of instream flows to influence the scale and implementation of these projects.

Miscellaneous Permitting

Opportunity. In addition to State pollution certification, the construction of a hydropower facility constitutes a "diversion" under the Connecticut Water Diversion Policy Act, a "regulated activity" under the Wetlands and Watercourses Act, and a "dam, dike, (or) other similar structure" under the Dam and Reservoir Inspection Statute. Therefore, numerous permits--all of which may be conditioned upon maintenance of instream flows--must be issued before a hydropower facility is constructed.

Background. A DEP permit for any diversion in excess of 50,000 gallons per day is required by Connecticut's Water Diversion Policy Act (CGSA §§ 22a-365 to 378). The Act defines "diversion" as "any activity which causes, allows, or results in the withdrawal from or the alteration, modification, or diminution of the instantaneous flow of the waters of the state" (CGSA §§ 22a-367(2)). Both ground and surface water diversions are covered by the statute. Permit application requirements include explanations of the need for the diversion; the proposed use; locations of proposed discharges and withdrawals; and findings regarding the effect of the proposed diversion on water quality, wastewater treatment capacity, recreation, wetlands, flood management, agriculture, and fish and wildlife. Environmental effects of the diversion must be detailed, as must project alternatives and economic analyses (CGSA § 22a-369). In reviewing the application, DEP is required to consider "all relevant facts and circumstances," including the need for the diversion and its impact on factors discussed above, its compatibility with other policies and programs of the Department and the State, and its impact on neighboring municipalities (CGSA § 22a-373).

Hydropower dams, as opposed to water supply dams, may constitute a "regulated activity" under the Wetlands and Watercourses Act (CGSA §§ 22a-36 through 45). Thus, municipal Inland Wetlands and Watercourses Commissions, or DEP in lieu of the existence of such commissions, may require permits for the regulated activity of hydropower dam construction.

Under Connecticut's Water Resources Statute (CGSA §§ 22a-336 through 390) DEP is required to establish stream channel encroachment lines for flood control. Once established, any construction within these lines must be permitted. Nonpermitted or nonconforming uses constitute a public nuisance and may be abated as such by action of the Attorney General (CGSA § 22a-346).

Thus, nonpermitted obstructions that impair the natural flow of the stream within stream encroachment lines may be removed.

Finally, dam safety permits must be issued (CGSA §§ 22a-401 to 410). Environmental impact evaluations are required as a prerequisite to the issuance of a dam safety permit, including an evaluation of the need for a fishway. (The fishway provision is discussed in more detail in the section titled "Non-Hydropower Dams.")

Example. A recent example has arisen with regard to the Thames Power Cogeneration Facility on the Thames River. Impoundments exist at more than one point on the river. To insure instream flows, DEP, as a condition to the issuance of a diversion permit, has required the submission of a detailed flow monitoring plan. The water diverted downstream could normally be supplemented by release of waters from the upstream impoundment. However, due to the recreational uses of the upstream impoundment, and the adverse impact that substantial releases would have on these uses, DEP is requiring a quantitative evaluation regarding minimum necessary upstream releases. DEP will only allow releases at these minimum levels, to insure both the maintenance of instream flows downstream and the preservation of the recreational character of the upstream impoundment.

Evaluation. Before the issuance of these permits, DEP requires spillway channel configuration that insures proper configuration of the minimum stream-flow. A problem arises on small streams, however, where the flow is difficult, or impossible to measure. In such streams, DEP has required instream flow computer modeling, or the use of weirs as a State permit condition to insure minimum streamflows.

The application reviews for the miscellaneous permits discussed above are generally made concurrently with § 401 certification evaluations. Thus, any problem which may arise is generally addressed during the § 401 review process. These concurrent reviews insure that issues regarding maintenance of stream-flows will be addressed at some point in the certification and permit process.

Note: Some information in this section was provided by personal communication with the following people:

D. Cunningham, Connecticut Department of Environmental Protection, Water Resources Unit, January 20, 1987.

B. Emerick, Connecticut Department of Environmental Protection, Planning Unit 8, January 20, 1987.

DAMS DESIGNED FOR PURPOSES OTHER THAN HYDROPOWER

Opportunity

As discussed in the previous section, the erection of dams in Connecticut is subject to a variety of State permit requirements. The construction of

water supply and recreational dams is often contingent on the applicant's maintenance of instream flows through minimum streamflow releases, and on the use of fishways.

Background

Although water supply and recreation dams are considered an as-of-right use for water supply purposes under the Inland Wetlands and Watercourses statute (CGSA § 22a-40(a)(5)), their construction is still subject to a variety of permits, which may be conditioned on maintenance of instream flows. Permits for stream channel encroachment and diversions, as well as dam safety certifications, as discussed here in preceding and later sections, must be obtained.

All "dams, dikes, reservoirs and other similar structures, with their appurtenances, without exception . . . , which, by breaking away or otherwise might endanger life or property" must be permitted (if a new construction) or receive a certificate of approval (if an existing structure) from DEP (CGSA §§ 22a-403; 405). In deciding whether to issue a permit or certificate of approval, DEP must consider "the need for a fishway in accordance with the provisions of Section 26-136 (1982)" (CGSA § 22a-403), which reads in pertinent part as follows:

The commissioner shall determine whether such dam or artificial obstruction shall be provided by the person, firm, corporation, or municipality or political subdivision thereof, owning or controlling the dam or obstruction with a suitable fishway for the passage of fish. Upon receipt of an application for a permit to construct, rebuild, or substantially repair a dam or artificial obstruction built upon any stream, the commissioner shall require the dam or artificial obstruction be provided with a fishway if such a facility is necessary to protect fisheries resources by providing access to natural spawning or nursery areas or to protect the public interest by preventing the loss of a fishery from the area of the dam or artificial obstruction. For the purposes of this section, "rebuild" or "substantially repair" means any action altering the structure of the dam or artificial obstruction, changing the use of the dam or impeding the available free passage of fish.

Additionally, 10 or more persons owning property above any dam or other artificial obstruction may petition DEP to include a fishway in the dam (CGSA § 26-136). Upon receipt of such petition, DEP shall determine if a fish passage or a public hearing to discuss the proposed fish passage is necessary.

Example

Negotiations are underway (January 1987) to construct a fishway on the Greenville Dam on the Shetucket River in Norwich, Connecticut. The construction of this fishway is part of a coordinated State and Federal effort to restore anadromous fish species to the Thames River Basin, as described in the report "A Preliminary Plan for the Restoration of Anadromous Fish to the Thames River Basin" (Connecticut Department of Environmental Protection,

Bureau of Fisheries, August 1, 1985--here termed the Thames River Basin Study). The report indicates that the Thames River Basin has sufficient spawning and rearing habitat to support potential adult runs of 467,000 American shad (Alosa sapidissima), 8,000 Atlantic salmon (Salmo salar), and several million "river herring" or alewives (Alosa pseudoharengus) and blueback herring (Alosa aestivalis), provided that adequate fish passage facilities are constructed for both upstream and downstream migrants at designated dams. (Thames River Basin Study, Sections 11 and 12; Rizzo, "Preliminary Report Regarding Proposed Fish Passage Facilities at the Greenville Dam on the Shetucket River in Norwich, Connecticut," U.S. Fish and Wildlife Service, August 28, 1986 (here termed Preliminary Report)).

The Greenville Dam diverts 1900 cubic feet per second to two licensed hydropower plants on the Shetucket River. The fishway proposed for the dam would be able to accommodate the entire 467,000 American shad and 8,000 Atlantic salmon mentioned above.

To enhance the efficiency of the fishway located at the west end of the Greenville Dam, a minimum discharge of from 300-500 cfs (actual amount to be determined by field studies with anadromous fish) is proposed in the reach below the dam. This flow would include the 100 cfs attraction flow at the fishway entrance plus 200-400 cfs released from proposed spillway crest gates or stop plank bays adjacent to the fishway. (Preliminary Report, Section 5).

Thus, the fishway will have the added benefit of maintaining minimum streamflows on the river.

The Greenville Dam fishway is only one of a number of proposed fish passage facilities within the Thames River Basin. Successful use of such facilities requires the maintenance of minimum streamflows. Fishways thus represent a substantial opportunity for protecting instream flows, as well as the fish species that are dependent on such flows.

Evaluation

Fishways have been required and are now in use at the Rainbow Reservoir Dam on Farmington River, the Leesville Dam on Salmon River, and the Lees Dam in Westport, on Five-Mile River. Fish passage facilities are scheduled to be implemented in Connecticut under three categories: (1) fishway needed immediately, (2) fishway may be required in the future, and (3) no fishway needed. Although the Fisheries Bureau has required few fishways immediately, a significant portion of the permits issued call for fishways in the future (when, however, is uncertain). The streamflow benefits accruing from the use of fishways can be realized only if the facilities are constructed as scheduled. Unfortunately, such construction is subject to limitations in financial resources and personnel.

To date, DEP has received no petitions to include fishways as parts of dam repair projects--perhaps because knowledge of the existence of the statutory provision is lacking. The communication of such opportunities by

DEP to local conservation groups and municipalities may serve to increase the use of what could be a powerful citizens' tool in protecting instream flows.

Note: Some information in this section was provided by personal communication with the following people:

W. Marsh, Connecticut Department of Environmental Protection, January 6, 1987.

J. Moulton, Connecticut Department of Environmental Protection, Fisheries Unit, January 6, 1987.

STREAM ALTERATION PERMITS

Opportunity

Substantial opportunities for consideration of streamflow maintenance are represented in DEP's authority to issue permits for (1) stream encroachments within defined stream encroachment lines, (2) removal of sand and gravel from streambeds, and (3) diversions in excess of 50,000 gallons per day.

Background

The DEP is responsible for the establishment

along any tidal or inland waterway or flood-prone area considered for stream clearance, channel improvement or any form of flood control or flood alleviation measure, lines beyond which, in the direction of the waterway or flood-prone area, no obstruction or encroachment shall be placed, unless authorized by the commissioner. (CGSA § 22a-342-349).

In determining these stream channel encroachment lines, DEP is charged with considering historic flood levels, future development, and riparian interests (CGSA § 22a-343). Establishment of these stream encroachment lines are subject to public hearing and comment by affected landowners. Once such laws are adopted, however, any unauthorized structure falling within them in the direction of the waterway will be considered a public nuisance. The Attorney General can then initiate action to enjoin or abate the nuisance (CGSA § 22a-346). The State has sole authority over stream encroachments and disturbance of watercourses over a small percentage of Connecticut's waters; most are subject to a shared jurisdiction between the State and local inland wetlands commissions (discussed later). This dual authority has led to mixed results in terms of instream flow and habitat protection.

In considering whether to issue a permit, the commissioner must consider

the effect of such proposed encroachments upon the flood-carrying and water storage capacity of the afterways and flood plains, flood heights, hazards to life and property, and the

protection and preservation of the natural resources and ecosystems of the state, including but not limited to ground and surface water, animal, plant and aquatic life, nutrient exchange, and energy flow, with due consideration given to the results of similar encroachments constructed along the reach of waterway. (CGSA § 22-342).

Similar considerations are mandated for the issuance of permits to remove sand and gravel from lands under tidal and coastal waters (CGSA § 22a-383 et seq.). Indeed, the case of Shorehaven Golf Club, Inc. v. Water Resource Commission (discussed in the "Riparian Rights/Navigational Servitudes" section) involved an appeal from the commission's denial of a permit to remove sand and gravel. In that case, the permit was denied, because it involved taking of "unwarranted quantities of state-owned lands for private purposes."

Finally, another obstacle to those who might otherwise alter streamflows without due consideration to their protection is presented by the Connecticut Water Diversion Policy Act (CGSA §§ 22a-367 to 378), discussed at length in the "Hydropower Development" and "Statewide Land Use Laws" sections. This statute, applicable to stream alterations on a watershed 200 acres or more or withdrawals of water in excess of 50,000 gallons per day, requires extensive streamflow considerations and mitigation measures to insure streamflow protection.

Evaluation

These three statutes, individually, and in tandem, represent substantial opportunities for conditioning permits on the maintenance of instream flow values, or denying such permits where substantial streamflow impairment would result. All three statutes recognize the need to protect sensitive ecosystems and the streamflows upon which the preservation of these systems depend. All of these statutes have arisen in other contexts in this paper, indicating that their impact goes beyond the context of simple stream alteration.

STATEWIDE LAND USE LAWS

A number of Connecticut statutes allow for comprehensive land use and resources planning, some specifically focusing on the preservation of water resources. The Inland Wetlands and Watercourses Act (CGSA §§ 22a-36 through 45) and the Coastal Management Act (CGSA §§ 22a-90 through 112) provide methods by which development in coastal and wetlands areas can be controlled, and whereby the natural flows in wetlands and coastal areas can be maintained, and sometimes restored.

In addition, State permit processes, which might otherwise not be considered as regulating land use, can be used to control water resources development, thereby impacting on commercial, industrial, and residential growth, all of which depend on the availability of water resources.

This section focuses on the interrelationship between coastal and inland water resources, and the laws designed to regulate their use. The application of these laws may have impacts far beyond the quantity of water in the stream.

One should not lose sight of the fact that the choice of one policy alternative necessarily precludes the use of a host of others. Thus, the choice to protect instream flows may prevent consideration of development alternatives.

Inland Wetlands and Watercourses Act

Opportunity. Under the Connecticut Inland Wetlands and Watercourses act (CGSA § 22a-36 through 45), "regulated activities" in inland wetlands (as distinguished from tidal wetlands, see "Tidal Wetlands" section, must be permitted by DEP. The permit process provides an opportunity to protect the wetland and the streamflows therein from development that might adversely affect sensitive wetland environments.

Background. In Connecticut, the regulation of inland wetlands and watercourses is separate from the regulation of tidal wetlands. Inland wetlands regulation is discussed here, and in the "Local and Regional Regulation and Planning" section. Tidal wetlands are addressed in the "Tidal Wetlands" section.

The "Legislative Finding" section of the Inland Wetlands and Watercourses Act (CGSA § 22a-36), details the "indispensable and irreplaceable" nature of inland wetlands and watercourses; finds that many such areas have been destroyed by unregulated diversions, depositions, filling, and development; and further states that continued unregulated activity

has had, and will continue to have, a significant, adverse impact on the environment and ecology of the state of Connecticut, and has and will continue to imperil the quality of the environment, thus adversely affecting the ecological, scenic, historic, and recreational values and benefits of the state for its citizens now and forevermore.

The statute therefore establishes a regulatory process whereby permits must be obtained to undertake "regulated activities" in inland wetlands and watercourses, either from DEP or municipal inland wetlands and watercourses commissions. These municipal commissions are discussed at length in the "Local and Regional Planning" section.

A "regulated activity" is defined as "any operation within or use of a wetland or watercourse involving removal or deposition of material, or any obstruction, construction, alteration or pollution, of such wetlands or watercourses" (CGSA § 22a-38(13)). The statute does allow "as of right" permitting for certain agricultural, residential, and water supply uses (CGSA § 22a-40). Regulations promulgated pursuant to the act allow uses that "do not disturb the natural and indigenous character of the land." Such uses include conservation measures and properly regulated recreational activities (CAR § 22a-39-3.2).

Any person wishing to undertake a regulated activity must apply for a permit, to either the Municipal Inland Wetland and Watercourses Commission (discussed later), or DEP. Activities exclusively in the purview of DEP include dam construction or modification; the placement of an obstruction within stream channel encroachment lines; construction within tidal, coastal,

or navigable waters, diversions, and discharges (CAR § 22a-39-4.3a). The DEP, in considering an application of a regulated activity permit, must consider many factors: the environmental impact of the activity; its alternatives; long-term versus short-term environmental gains and losses associated with permitting the activity; irreversible and irretrievable commitments of resources; health and safety; the balance between ecological versus economic interests; and mitigation measures (CAR § 22a-39-6.1). These criteria are similar to the considerations that must be addressed in an environmental impact statement under the National Environmental Policy Act (42 U.S.C. 4321 et seq.; 40 C.F.R. § 1502).

Example. In the case of East Haven Economic Development Commission v. DEP [36 Conn. Supp. 1, 409 Atl.2d 158 (1979)], the East Haven Economic Development Commission (Commission) had applied to DEP for a regulated activity permit to fill a portion of an inland wetland for an industrial park. The DEP granted part of the application, allowing the filling of 29 acres of inland wetlands, but DEP denied the portion of the application that sought to fill and grade a pond and wetland on the eastern boundary of the park.

The watercourse channel proposed to bypass said pond and associated wetland in this area is hereby denied. Any new channel shall be designed so as to maintain water flow through said pond and associated wetland, and shall be subject to approval by the Water Resources Unit.

The Development Commission challenged the permit denial. In upholding the DEP decision, the court found that the area was "environmentally significant and unique," exhibiting ecological diversity inherent in wetlands communities. The Court reviewed DEP's balance between economic growth and the need to protect the wetland's environment and ecology, and found the DEP's decision to be proper.

It should be noted, as a postscript, that after the City of East Haven lost its court appeal, it formed its own wetland commission and approved the filling of the very same inland wetland area that had been previously denied. In retrospect, jurisdiction over the site should have been retained by DEP when wetland responsibilities were transferred to the City.

Evaluation. The East Haven case exemplifies how a State land use law, which focuses on the maintenance of streamflows through wetlands and watercourses, can be used to protect environmental and instream flow values upon which the ecological diversity of wetland areas depend. Increased sensitivity to the value of the wetlands as unique resources, as reflected by the aggressive use of the Wetlands and Watercourses Act, at least by DEP, should continue to preserve and protect these valuable natural areas, and the streamflows that traverse them. As the postscript (above) notes, however, sensitivity to the political dynamics of any development project may be as important as the use of statutory authority in preserving instream flows.

Coastal Management Act

Opportunity. Connecticut's Coastal Management Act (CGSA §§ 22a-90 to 112) recognizes the balance between desirable development and preservation of

environmental values in coastal areas. To achieve this balance, the Act provides comprehensive planning, research, and permitting authority for coastal development, whereby preservation of streamflows in sensitive coastal environments can be effected.

Background. Although the primary focus of the Inland Wetlands and Watercourses Act is on the preservation of sensitive wetlands environments, and development interests represent only a secondary consideration, the Coastal Management Act aims to balance the maintenance of economic development in coastal areas with the adverse environmental impacts caused by unregulated development.

The goals and policies of the Act attempt to achieve a balance

To insure that the development, preservation or use of the land and water resources of the coastal area proceeds in a manner consistent with the capability of the land and water resources to support development, preservation or use without significantly disrupting either the natural environment or sound economic growth.

Among the features of the Act that may serve to protect instream flows is the requirement that structures in coastal waters be designed, constructed, and maintained to minimize adverse impacts on circulation, erosion, sedimentation, and water quality--including a prohibition on the siting of tank farms and new chemical storage facilities within coastal areas, and limitations on the placement of sewage outfalls. Other policies include maintenance of tidal wetlands and natural areas (CGSA § 22a-92).

To accomplish these purposes, DEP is responsible for mapping coastal areas, assisting municipalities in carrying out their responsibilities under the act (see discussion in "Local and Regional Planning" section), providing technical support, obtaining interstate agreements, and preparing model municipal coastal programs (CGSA § 22a-95 to 97).

In addition, DEP undertakes Coastal Area Management (CAM) reviews of activities requiring Federal permits--primarily permits under Section 404 of the Clean Water Act (Dredge and Fill permits issued by the Army Corps of Engineers)--to determine Federal consistency with State coastal programs. These "consistency reviews" are authorized by the Federal Coastal Zone Management Act (16 U.S.C. 1451 et seq.), and regulations promulgated thereunder (15 C.F.R. § 930).

Evaluation. The interrelation between coastal and inland resources must be recognized even though the statutes tend to separate tidal from inland wetlands (compare CGSA §§ 22a-28 to 35, applicable to tidal wetlands, with CGSA §§ 36 - 42, applicable to inland wetlands and watercourses), and coastal from noncoastal resources (compare municipal zoning powers under the Coastal Management Act, CGSA §§ 103 - 109, with general municipal zoning powers, CGSA § 8-1 et seq.). The hydrologic cycle (fresh water flows to the sea, evaporates, and falls back to earth as fresh water) necessitates an integrated approach to instream flow protection. Thus, even though the separation of

coastal from inland resources, may facilitate administration, it should not prevent the integration of coastal and inland streamflow protections.

Nearly 65% of commercial fish species inhabit coastal estuaries at some time during their life cycle, and many of these species move inland during times in their lives. The Coastal Management Act's directive to "manage intertidal flats so as to preserve their value as a nutrient source and reservoir, a healthy shellfish habitat and a valuable feeding area for invertebrates, fish and shorebirds," and to allow only uses that "minimize change in the natural current flows" (CGSA § 22a-92(b)(2)(D)) that serve to enhance the ecological diversity of these coastal areas and the "natural flows" therein. Once the species that inhabit these coastal estuaries and intertidal flats move into inland waters, protection must be extended to these inland habitats, and to the natural flows on which the maintenance of this inland habitat depends.

Diversion Permits as Land Use Controls

Opportunity. As previously noted in the "Non-Hydropower Dams" and "Stream Alteration Permits" sections, the issuance of diversion permits may be made contingent on the maintenance of instream flows (CGSA §§ 22a-369; 373). When the diversions at issue are for municipal water supply, on which continued industrial, residential, and commercial growth depends, the diversion statute operates in the same way as a statewide land use statute, limiting development to preserve environmental values. Continued industrial, commercial, and residential growth may thus become contingent on the maintenance of instream flows.

Background. The growth of cities and towns depends on the availability of fresh water. This availability is rarely questioned in the "water rich" Northeast. Yet, rapid growth and competing uses have stressed available water resources.

In recognition that the waters of Connecticut are a precious, finite and invaluable resource upon which there is an ever increasing demand for present, new and competing uses; and in further recognition that an adequate supply of water for domestic, agricultural, industrial and recreational use and for fish and wildlife is essential to the health, safety and welfare of the people of Connecticut, it is found and declared that diversion of the waters of the state shall be permitted only when such diversion is found to be necessary, is compatible with long-range water resource planning and proper management (CGSA § 22a-366).

The Connecticut Water Diversion Policy Act (CGSA § 22a-365 - 378) therefore requires DEP-issued diversion permits for new diversions (after July 1, 1982) in excess of 50,000 gallons per day, or from streams with a watershed of 100 acres or more. "'Diversion' means any activity which causes, allows or results in the withdrawal from or alteration, modification or diminution of the instantaneous waters of the state" (CGSA § 22a-367(a)). Applications for diversions must include information on the need for the diversion, the quantity and use of the water to be diverted, alternatives to the proposed diversion,

the environmental effect of the diversion, and contingency plans for times of shortage.

The diversion permit may be used not only to insure environmental controls, data collection, and the maintenance of minimum stream flows, but also as a means of allocating the State's water resources.

Example. Connecticut's Quinnipiac River, which discharges into Long Island Sound, flows through a highly industrialized sector of the State. Many sewage treatment plants discharge into the river, and its quality is generally poor.

An issue has arisen which pits three towns along the Quinnipiac against DEP, raising issues of water use, allocation, and the legality and viability of making community growth contingent on the issuance of a diversion permit. Three towns have applied to DEP for a diversion permit to place water supply wells on the aquifer in the Quinnipiac basin. The aquifer is hydrologically related to the surface flows of the Quinnipiac. The DEP fears that pumping will decrease surface flows, on which water quality compliance depends. [See "Water Quality" section of this report.] The DEP claims that the water quality of the river will fall below acceptable limits during peak pumping, when the discharge from the sewage treatment plants combines with the impaired ability of the diminished flow of the river to assimilate such discharges. (Calculations are based on the 7Q10 model--or 7-day low flows, which occur every 10 years).

One solution would be to allow the diversion, but upgrade the sewage treatment plants. This alternative is problematic, given the high costs it would impose on municipalities. Denying the diversion permit would have the effect of curtailing growth in the affected towns. It is uncertain whether such a result was the legislative intent of the Connecticut Water Diversion Policy Act.

Evaluation. The example discussed above depicts the tension that may arise between legitimate municipal development interests, and DEP efforts to protect water quality and streamflows through the use of a statewide land use law--in this case, the Water Diversion Policy Act. The Quinnipiac River as a watercourse is listed as Class SD, the poorest quality water in Connecticut.

Municipal and industrial discharges along the Quinnipiac River have resulted in low dissolved oxygen conditions and high coliform bacteria counts. New Haven combined sewers and urban runoff seriously degrade the river's water quality. Bathing and other recreational uses are precluded, and fish and aquatic life are impacted by periods of low dissolved oxygen. (Connecticut Water Quality Standards and Classification, Appendix D).

Watercourses have the ability, however, to cleanse themselves over time. The return of the shad run to the Hudson and the general improvement in the water quality of Lake Erie are but two examples. Recent reauthorization of the Federal Clean Water Act, which includes funding to upgrade sewage treatment plants, may serve as an incremental step toward improving water quality in the

Quinnipiac. However, the continued use of the 7Q10 model as a basis for water quality permit determinations will result in very low flows.

The costs of water quality control and the maintenance of instream flows on which such quality dependents, are now being felt by the three towns whose diversion permits remain in limbo. Yet benefits to the towns may be realized in the future. Improved water quality may increase recreational uses of the river. Increased recreational use may lead to waterfront development, an activity on which the towns may have an opportunity to capitalize. Once the water quality has improved sufficiently, the water supply wells are likely to be allowed. Thus, over time, water quality, instream flows, and development may be enhanced.

Note: Some information for this section was provided by personal communication with the following people:

G. Bligh, Southington Water Department, Southington, Connecticut, January 22, 1987.

D. Cunningham, Connecticut Department of Environmental Protection, Water Compliance Unit, January 20, 1987.

R. Huntly, Coastal Area Management Division, Connecticut Department of Environmental Protection, February 5, 1987.

FISHERIES AND WILDLIFE MANAGEMENT LAWS

Fisheries Management: Fish and Game Refuges

Opportunity. Connecticut fisheries and wildlife management laws present opportunities for the protection of species of fish and wildlife from encroachments that might otherwise disturb their habitats. These protections, such as consideration of the effects of dam development on fish species, the regulation of streamflows in stocked streams, and the designation of wildlife refuges, have the added benefits of maintaining the natural flow of watercourses within the designated areas, thus protecting instream flows.

Background. Fish and wildlife refuges are not designated primarily to protect instream flows, but instead to preserve and protect the species that dwell therein. Yet it would be difficult, if not impossible, to designate a fish spawning area or refuge under CGSA § 26-102 without insuring the maintenance of streamflows upon which spawning necessarily depends. Nor can waterfowl congregate where a paucity of water exists. Thus, the designation of fish and wildlife refuges can serve to protect instream flows in amounts sufficient to maintain a natural habitat for the species that dwell there.

The Commissioner of DEP is allowed by CGSA §§ 26-141a-141c to promulgate minimum streamflow regulations applicable to stocked streams, where the flow is regulated by a dam or other diversion. These regulations

- (1) Apply to all river and stream systems . . . which the Commissioner finds are reasonably necessary to keep a sufficient flow of water to protect and safely maintain the fish placed therein . . . pursuant to the stocking program;
- (2) Preserve and protect the natural aquatic life, including anadromous fish, contained in such waters;
- (3) Preserve and protect the natural and stocked wildlife dependent upon the flow of such water;
- (4) Promote and protect the usage of such water for public recreation; and
- (5) Must be consistent with the needs and requirements of public health, flood control, industry, public utilities, water supply, public safety, agriculture, and other lawful uses of such waters. (CGSA § 26-141b).

These regulations may be enforced through an administrative order, issued by DEP, or if such order fails to ensure compliance, by a court action brought by the Attorney General (CGSA § 26-141c).

CGSA § 26-134 provides that no person shall "prevent the passage of fish through the outlet or inlet of any pond or stream by means of any rack, screen, weir or other obstruction" unless authorized by DEP. Whether dams constitute obstructions under this statute is uncertain but, as discussed below, fish passage considerations have prompted DEP to oppose dam constructions, to preserve instream flows that might be impaired by such construction.

Example. In a 1981 matter regarding Massachusetts Municipal Wholesale Electric Company and Connecticut Municipal Electric Energy Cooperative (Project 3183-00), DEP sought to have FERC rescind a preliminary permit for the construction of a dam across the Connecticut River. DEP based their opposition on findings that

The construction of a dam in the main stem of the Connecticut River would create an obstruction that would cause irreparable harm to an ongoing anadromous fisheries restoration program. This inimical impact is attributed to the loss of a significant shad spawning area and the incremental loss of anadromous species, especially salmon, caused by the unsuccessful negotiation past this dam.

Of particular concern to DEP was the dam's potential interference with an aggressive indigenous species restoration program undertaken by Connecticut and the other three States in the basin (Vermont, Massachusetts, New Hampshire) in cooperation with conservation groups, private industry, and the U.S. Fish and Wildlife Service. (See discussion of the Connecticut River Atlantic Salmon Compact in the section titled "Interstate Compacts and Litigation Section.") On the basis of these and other considerations, the project as proposed was abandoned.

Evaluation. The maintenance of a viable fishery necessarily depends on the protection of streamflows that serve as fish habitat. Actions taken to maintain a fishery may thus enhance streamflows as well.

Endangered Species

Opportunity. The existence of an endangered or threatened aquatic species may prevent any action that would disturb that species' habitat, thus protecting streamflows within that habitat.

Background. The Federal Endangered Species Act (16 U.S.C. § 1531-42 (1976) and Supp. V (1981)) establishes a list of flora and fauna, whose numbers have been depleted to such an extent as to be considered "endangered" or "threatened." Connecticut's endangered species statute (CGSA § 26-44e) tracks this Federal list. Thus, any endangered or threatened aquatic fish, shellfish, or plant species can prevent the obstruction of habitat, thus preventing the impairment of instream flows as well.

The case of Tennessee Valley Authority v. Hill [437 U.S. 153, 98 S.Ct. 2279 (1978)] exemplifies the impact of the Federal endangered species legislation. Hill involved an action to enjoin the TVA from building the controversial Tellico Dam, the impoundment of which threatened to inundate the habitat of the endangered snail darter (Percina tanasi), a fish barely 3 inches long. The Supreme Court enjoined construction of the dam, finding an "irreconcilable conflict" between erection of the dam and the provisions of the Act. A 1979 Act of Congress finally granted Tellico an exemption from all laws prohibiting its construction (P.L. 96-69, 93 Stat. 357, 449-50 (1979)).

The Endangered Species Act has since been amended, providing a two-level review process culminating with a Cabinet-level Endangered Species Committee. (16 U.S.C. § 1536(e)-(h)). The Committee may grant exemptions for agency actions which would otherwise be prohibited by the Act, if no reasonable alternatives exist, if the benefits of the action clearly outweigh the costs of habitat destruction, if the action is of regional or national significance, and if mitigation procedures may minimize adverse impacts on the endangered species (16 U.S.C. § 1536(h)(1)).

Only six endangered animal or fish species that appear on the Federal list live or lived in Connecticut: bald eagle (Haliaeetus leucocephalus), Indiana bat (Myotis sodalis), eastern cougar (Felis concolor), piping plover (Charadrius melodus), peregrine falcon (Falco peregrinus), and short-nosed sturgeon (Acipenser brevirostrum). Neither the cougar nor the bat have been sighted in Connecticut in many years and are believed to be extinct in the State. One plant, the small world begonia, is also on the endangered list. Connecticut was in 1987 in the early planning stages of preparing its own endangered species list to supplement the Federal list.

Studies have identified a number of species in the Connecticut River Basin that would qualify as endangered or threatened. (See Stephenson, Interstate Rights to the Waters of the Connecticut River: Issues Raised by the Proposed Northfield Diversion, 4 W. NELR 641, 673, n. 229 (1982)).

Example. In 1984 and 1985, the State Highway Department proposed the rebuilding of Route 91, north of Hartford. The Highway Department sought to obtain a permit from DEP for the removal of sand and gravel from the Connecticut River (under CGSA § 22a-384), to use for road base. However, the existence of the short-nosed sturgeon, a Federally listed endangered species, in that reach of the river, necessitated the denial of the sand and gravel removal permit. The project thus had to be reconsidered. The sturgeon and the instream flows on which it depends were protected.

Evaluation. Connecticut's current authority to protect instream flows through the use of endangered species legislation is limited to projects that would adversely affect the habitat of the short-nosed sturgeon. DEP biologists are inventorying species for possible inclusion in a State endangered species list. Before this list can be promulgated, however, statutory authority must be obtained from the legislature. State endangered species legislation would probably be opposed by development interests. Until such legislation is passed, the protection of instream flows in Connecticut through the use of endangered species legislation remains dependent on the short-nosed sturgeon.

Note: Some information in this section was provided by personal communication with the following people:

R. Maroncelli, Wildlife Biologist, Connecticut Department of Environmental Protection, February 5, 1987.

J. Moulton, Connecticut Department of Environmental Protection, Fisheries Unit, January 13, 1987.

J. Victoria, Wildlife Biologist, Connecticut Department of Environmental Protection, Wildlife Bureau, January 13, 1987.

WATER QUALITY

Opportunity

The attainment of water quality standards depends on regulating the quantities of point and nonpoint pollutant sources and the dilution or attenuation of effluents in the stream. Thus, dischargers, to obtain and comply with their discharge permits, must maintain instream flow quantities.

Background

CGSA § 22a-430 mandates that

No person shall . . . initiate, create, or originate any new discharge of water, substance or material into the waters of the state without first obtaining a permit for such discharge from the commissioner [of DEP].

Discharge permits are issued subject to the maintenance of water quality standards in the stream. Inland surface waters are classified according to use as follows (Connecticut Water Quality Standards and Classifications, as amended):

- Class AA - Existing or proposed impoundments intended to supply drinking water, and tributary surface water.
- Class A - Potential drinking water supply; fish and wildlife habitat; suitable for bathing and all other uses. The presence of discharges including other than minor cooling water, and clean water or dredged materials, would require revision to Class B.
- Class B - Suitable for bathing, other recreational purposes, agricultural uses, certain industrial processes and cooling; excellent fish and wildlife habitat; high aesthetic value.
- Class C - Certain fish and wildlife habitat, suitable for recreational boating, and certain industrial processes and cooling; good aesthetic value. Swimming may be precluded. Criteria or designated uses applied to Class B waters uses may be impaired.
- Class D - May be suitable for bathing or other recreational purposes, certain fish and wildlife habitat, certain industrial processes and cooling; may have good aesthetic value. However, one or more of the above uses mentioned are severely inhibited or precluded.

For each of these classes, a number of quantitative chemical, biological, and turbidity standards exist. No discharge permit may be issued that would lower the class designation unless "such change is justifiable due to overriding economic or social needs and it will not interfere with or become injurious to any assigned uses made of, or presently possible in, such waters" (Connecticut Water Quality Standards and Classifications, Policy 2).

The DEP is currently in the process of promulgating regulations for minimum streamflows and mixing zones (zones where the discharge mixes with the waters of the stream) on which the issuance of permits, and continued compliance therewith, will be based. The current practice, to be codified in the new regulations, requires that there be "no chronic toxicity" (to aquatic organisms) at the 7Q10 levels. Protection against such toxicity has been extended to all forms of aquatic life. A "7Q10" level is the minimum 7-day flow during any given 10-year period. Some allowance is made for mixing zones. Thus, the "no chronic toxicity" level need not be effected at the point of outfall or in the mixing zone.

Where discharge permits are issued for streams in which the flow is regulated by a dam or other provision, the 7Q10 standard does not pertain because it is applicable only to natural streamflows, as opposed to streamflows regulated by a dam. Instead, the "no chronic toxicity" requirement is based on the minimum streamflow levels as specified in the dam or diversion permit.

Among the methods that dischargers use to comply with these requirements are upgrading treatment, relocating outflows, and adding diffusers to the end of outflow pipes. In addition, compliance with water quality standards is aided by the reduction of effluent amounts and the regulation of quantity discharged at any given time--known as "flow equalization."

Some dischargers have considered augmenting the stream flow from upstream impoundments during periods of low flows, but this augmentation has not yet become incorporated as a permit condition. One preliminary permit that has been issued is based on a variable discharge requirement: a heavier discharge during heavy-flow seasons, and decreased discharge during low-flow seasons. Several permits for municipal discharges contain seasonal limits related to seasonal variation in streamflows and water temperatures.

Evaluation

These situations exemplify how the maintenance of streamflows affect the water quality permitting process. Indeed, it may seem ironic that the ability of a company or municipality to discharge its effluent may be dependent on an unimpaired streamflow. This is one situation where continued industrial growth or municipal development depends on the maintenance of instream flows. In other situations, the preservation of streamflows may limit commercial, residential, and industrial development. The major drawback to instream values is that the 7Q10 model, when used to establish long-term minimum flows, often results in flows so low that instream needs for purposes other than dilution are not protected.

Note: Some information in this section was provided by personal communication with:

L. Dunbar, Senior Environmental Analyst, Connecticut Department of Environmental Protection, Water Compliance Unit, January 28, 1987.

TIDAL WETLANDS

Connecticut statutes contain specific provisions for the protection and acquisition of tidal wetlands that are solely within the jurisdiction of DEP, in addition to the provisions pertaining to inland wetlands and watercourses discussed in the sections titled "State Land Use Laws," and "Local and Regional Regulation and Planning."

State Tidal Wetlands Development Permits

Opportunity. The permitting of regulated activities by DEP within tidal wetlands represents an opportunity to prevent the erection of structures and the undertaking of activities that would impair tidal streamflows.

Background. Tidal wetlands have been declared in danger of being lost or despoiled by unregulated activities, such as dredging, dumping, and filling, by CGSA § 22a-28 of the Wetlands and Watercourses Act. The Act therefore

establishes a process by which DEP is vested with the sole State authority for issuing permits for "regulated activities" in tidal wetlands. This is in contrast to the municipal regulation and permitting scheme applicable to inland wetlands.

The legislature's mandate was that tidal wetlands were to be regulated exclusively by the state, through its commissioner of environmental protection, while the inland wetlands were to be controlled exclusively by municipalities with the advice, assistance, and cooperation of the state commissioner except on default. [Lauricella v. Planning and Zoning Bd. of Appeals of the Town of Greenwich, 32 Conn. Sup. 104, 342 Atl.2d 374 (1974)].

Regulated activities include the draining, dredging, and excavation of materials from the wetland; the dumping, filling, or deposition of substances into the wetland; and erection of structures therein (CGSA § 22a-29(3)).

In reviewing an application to conduct a regulated activity in a tidal wetland, DEP must consider "the public health and welfare, marine fisheries, shellfisheries, wildlife, the protection of life and property from flood, hurricane, and other natural disasters. The fact that the Department of Environmental Protection is in the process of acquisition of tidal wetlands by negotiation or condemnation . . . shall be sufficient basis for denial of a permit" (CGSA § 22a-33). As with other permit statutes, the applicant is entitled to a hearing, and appeal from a permit denial.

Example. One notable example involved an appeal from DEP's denial to fill about 5.3 acres of designated tidal wetland [Brecciaroli v. Connecticut Commissioner of Environmental Protection, 168 Conn. 349, 362 Atl.2d 948 (1975)]. The plaintiff claimed that DEP's denial constituted a taking without compensation. The court found that a solution to the problem required a balance between the "laudable state policy" and the "interests of the private landowner who wishes to make productive use of his wetland" [362 Atl.2d at 951]. The court, in determining the balance in favor of wetlands protection, found that "the denial of [the] application merely prohibited one specific use which was presumptively not reasonable when balanced against the public harm it would create" [362 Atl.2d at 952]. The court went on to note that the plaintiff could make other uses of his wetland area; thus no taking resulted from the permit denial.

Evaluation. The ability to permit or deny a regulated activity in a tidal wetland allows DEP to preserve such areas as valuable natural resources. "At least 65 percent of our nation's commercial fish and shellfish resources and most of our marine sport species inhabit the estuarine environment during all or part of their life cycle. Many of our valuable waterfowl use these areas as nesting and wintering sites" [Comment, Wetlands Statutes: Regulation or Taking?, 5 CONN. L. REV. 64, 65 (1972)].

Preservation of these sensitive natural areas necessarily requires the maintenance of their natural tidal streamflows. Thus, permitting under the wetlands statute may serve to protect streamflows in these sensitive areas.

Acquisition of Tidal Wetlands

Opportunity. The DEP's authority to acquire tidal wetlands and the tidal streamflows necessary to sustain them, combined with private acquisition efforts, serves as a substantial opportunity to preserve these environments.

Evaluation. Under CGSA § 26-17a(b),

The commissioner of environmental protection may, by purchase, exchange, condemnation, gift, devise, lease, or otherwise acquire tidal wetlands or any easements, interests or rights therein, or enter into covenants and agreements with owners of such tidal wetlands to maintain, improve, protect, limit the future use of or otherwise conserve such tidal wetlands. The commissioner may also enter into leases with an option to buy tidal wetlands, provided the term of any such lease shall not exceed ten years.

Connecticut once had about 22,300 acres of tidal wetlands, dating back to historic records of 1884. Today 70 to 80 percent, or about 17,500 acres, remain. Although resource constraints and competing priorities have stalled the State's acquisition of tidal wetlands during the past 5 years, private acquisitions and State regulation have ensured their preservation.

Indeed, the Nature Conservancy, a private, nonprofit, charitable organization, has acquired over 16,000 acres of sensitive areas in Connecticut. Much of the area is composed of wetlands and uplands that serve as buffers to shield these ecologically sensitive areas from the impacts of development. For instance, the Conservancy has recently acquired fee title to 50 acres with a conservation easement for another 55 acres in the town of Old Lyme, within the Lower Connecticut River Conservation Zone (see section on "Local and Regional Regulation and Planning"). Included in this acreage was a substantial amount of tidal wetlands.

These efforts allow the preservation of sensitive wetlands, and other environments, and serve to maintain the streamflows upon which their delicate ecology depends.

Note: Some information in this section was provided by personal communication with the following people:

L. Corey, Connecticut Nature Conservancy, January 26, 1987.

R. Rosza, Biologist, Connecticut Department of Environmental Protection, Coastal Area Management, January 26, 1987.

LOCAL AND REGIONAL REGULATION AND PLANNING

In addition to a municipality's traditional zoning powers, both the Inland Wetlands Act and the Watercourses and Coastal Management Act create

mechanisms by which municipal commissions may regulate activities within inland wetlands or coastal areas. Regional planning agencies also serve to coordinate planning and development throughout sensitive watersheds.

Planning and Zoning Commissions

Opportunity. Local zoning and planning commissions may use their traditional zoning powers to limit or regulate development in sensitive areas, thereby protecting instream flows.

Background. Municipal zoning and planning commissions consist of five to nine members. (CGSA § 8-1). The commissions are given authority to exercise statutorily conferred powers, which include powers to impose limitations on the number and size of buildings, the density of population, and locations and uses of structures and lands within a municipality (CGSA § 8-2). The adoption of zoning regulations is a legislative function [*A.P. & W. Holding Corp. v. Planning and Zoning Bd. of City of Milford*, 167 Conn. 182, 355 Atl.2d 91 (1974)]. Thus, a court will disturb the decision of a zoning board only when that board has abused its discretion, or acted beyond the scope of its statutory authority [*Coastal Suburban Builders, Inc. v. Planning and Zoning Comm'n of Town of East Haven*, 2 Conn. App. 489, 479 Atl.2d 1239 (1984)].

Given this broad discretion, local zoning boards and commissions can use their traditional authority to protect and maintain instream flow values.

Example. *Zygmunt v. Planning and Zoning Commission of the Town of Greenwich* [152 Conn. 550, 210 Atl.2d 172 (1965)] involved a challenge to the Greenwich Zoning Commission's denial of an application to change the zoning of a 13-acre parcel of land from RA-4 (4 acres per single family residence) to R-20, which would allow subdivision into lots having an area of 20,000 square feet or larger.

The evidence before the Commission included studies indicating "that the subsoil conditions were not satisfactory to accommodate adequate leaching fields (septic systems) without endangering the underground water supply" [210 Atl.2d at 174]. Additional evidence indicated that 4 to 5 acres of the parcel were wetlands.

The court upheld the zoning commission's decision, finding the decision to be reasonable, supported by the evidence, and not an abuse of discretion. The commission in *Zygmunt* was concerned about leaching into the groundwater system, which is hydrologically related to surface flows. Hence, this case exemplifies the use of traditional zoning powers in such a way as to protect instream flow quality, with added benefits to instream flow quantities, given that the protection of one aquifer will eliminate the need to deplete another aquifer, or surface flow elsewhere (see discussion in the section titled "Groundwater").

Evaluation. The use of traditional zoning powers, by which density of development is regulated, may serve an important role in streamflow protections. Increased density stresses sensitive environments by adversely affecting their capacity to assimilate increased septic discharges, erosion,

and surface runoff--all of which impact instream flows. Limitations on density of development lessen these impacts, thus serving to protect the instream flows.

Inland Wetlands and Watercourses Commissions

Opportunity. The Inland Wetlands and Watercourses Statute provides for the establishment of municipal Inland Wetlands and Watercourses Commissions. These commissions can act as a powerful force in preserving instream flows in sensitive inland wetlands environments.

Background. Under the Inland Wetlands and Watercourses Act, municipalities are encouraged to pass ordinances authorizing any existing board or commission, or to establish new boards or commissions, to protect wetlands and watercourses within the territorial limits of the town (CGSA § 22a-42). The commissions are authorized to establish boundaries of inland wetland and watercourse areas, subject to public hearings and comment. The commissions may promulgate regulations, which must conform to regulations set forth by DEP under the Act (see CAR § 22a-39-11). Once these regulations are approved by DEP, the municipal agency responsible for the regulation of inland wetlands and watercourses is vested with authority to review applications to conduct "regulated activities" within these areas, and grant or deny permits for such activities.

It should be noted that the jurisdiction of municipal inland wetlands and watercourses agencies is limited to consideration of environmental impacts that directly affect inland wetlands.

Although in considering an application for a permit to engage in any regulated activity a local inland wetland agency must, under § 22a-41, take into account the environmental impact of the proposed project, it is the impact on the regulated area that is pertinent, not the environmental impact in general. [*Connecticut Fund for the Environment, Inc. v. City of Stanford*, 192 Conn. 247, 470 Atl.2d 1214 (1984)].

Examples. The Conservation Commission of the Town of Simsbury, a municipal inland wetlands and watercourses agency under the statute, has been involved in two Supreme Court cases, each challenging the exercise of their authority under the Act.

In *Conservation Commission of the Town of Simsbury v. Price* [193 Conn. 414, 479 Atl.2d 187 (1984)], the commission sought to enjoin Mr. and Mrs. Price from maintaining an unpermitted dam on their property, in violation of both municipal inland wetlands and watercourses agency regulations, and the Act.

The dam consists of reinforced concrete in the center and dirt on its sides or wings. A small pipe protrudes from the northerly side of the dam which emits an odor of sewage. When operative, the dam creates a pond which is approximately thirty-five feet across and the dam is high enough to hold back water to a level of about four feet above the streambed. [479 Atl.2d at 190]].

The Prices had made an abortive effort to obtain a permit, but never completed the application process. The commission sought and obtained an injunction in the trial court. The Prices then appealed. The Supreme Court found that the dam constituted a "diversion or alteration of the watercourse" in violation of § 22a-40(a)(4) of the Act, represented a potential source of pollution, and threatened property damage in the event of the dam's failure. The injunction against the Prices, forcing them to abate an activity directly injurious to instream flows, was therefore upheld.

Manor Development Corp. v. Conservation Commission of the Town of Simsbury [180 Conn. 692, 433 Atl.2d 999 (1980)] involved an appeal from the denial of an application to conduct a regulated activity (housing development) in a wetland. The plaintiffs claimed that the permit denial constituted an unconstitutional taking of property without compensation.

Among the findings supporting the commission's decision were that "the area is valuable as a natural habitat and development would destroy this," and "the area may also serve as a significant aquifer recharge area and a means of sustaining stream flow" [433 Atl.2d at 1001]. The court, in upholding the commission's decision, found that a decrease in property value did not rise to the level of an unconstitutional taking. The court further concluded that the commission's decision was not arbitrary or an abuse of discretion and was supported by the evidence. [For another case upholding the denial of a permit by a municipal inland wetlands and watercourses agency, see Aaron v. Conservation Commission of the Town of Redding, 183 Conn. 532, 441 Atl.2d 30 (1981)].

Evaluation. These cases exemplify how municipal inland wetlands and watercourses agencies may aggressively protect the environments within their charge. As noted above, these environments serve as significant aquifer recharge areas, and as a means of sustaining instream flows.

Coastal Management Commission

Opportunity. Connecticut's Coastal Management Act provides for the adoption of municipal coastal programs by coastal municipalities. Municipal site-plan reviews, which are an important aspect of these programs, serve as a means of incorporating streamflow values into coastal development decisions.

Background. CGSA § 22a-101(a) provides that:

In order to carry out the policies and provisions of this chapter and to provide more specific guidance to coastal area property owners and developers, coastal municipalities may adopt a municipal coastal program for the area within the coastal boundary and landward of the mean high water mark.

Municipal coastal programs include revisions of municipal plans of development, including "an identification and written description of the municipality's major coastal-related issues and problems . . . such as erosion, flooding, recreational facilities, and utilization of port facilities"

To facilitate these coastal programs, zoning commissions within coastal areas may revise their zoning regulations to accord with the municipal development plans. These revised development plans and regulations must be approved by DEP (see CGSA § 22a-102 - 103).

Under the Coastal Management Act, applications that would normally require approval of a planning and zoning commission (subdivision plans, variances, planned unit developments, etc.) must undergo a coastal site plan review by municipal coastal planning and zoning commissions. The review is designed "to determine whether or not the potential adverse impacts of the proposed activity on both coastal resources and future water dependent development activities are acceptable" (CGSA § 22a-106). Municipal commissions are aided in their deliberations by an eight-person technical advisory staff from DEP. The commission may approve, modify, or deny the plan, but must do so within 65 days (CGSA § 8-7d(b)). If no action is taken on a properly submitted site plan within the statutory 65-day period, it is deemed approved [Vartuli v. Sotire, 192 Conn. 353, 472 Atl.2d 336 (1984)].

Example. The town of Old Lyme is situated in the Lower Connecticut River Conservation Zone. The town planning commission, a municipal coastal commission under the act, was approached by a developer to build a residential subdivision on 19 acres of upland, which would include the development of a marina on 2 acres of tidal wetland and a subdivision of 20 units.

The town's coastal site plan review determined that the subdivision's septic system was incompatible with the soil and water conditions in the area. A dialogue between the developer, the commission, and DEP resulted in modification of the plan to include only 11 units. In addition, construction of the marina was rejected. Instead, the tidal wetland was designated as open space, as a condition of the development permit. Flows in the tidal wetland were thus protected.

Evaluation. Municipal coastal site plan review, aided by DEP technical expertise, serves as a means by which the effects of coastal development on streamflow can be considered and, when necessary, mitigated. Local review can aid in achieving the balance between development and environmental protection that is the goal of the Coastal Management Act.

It should be noted, however, that municipal coastal site plan review is a separate from consistency determinations by State coastal area management (CAM) (see discussion in section titled "Statewide Land Use Laws"). Thus, the State's CAM review process may tend to overshadow the municipal site plan reviews, making the municipal review a rubberstamp for DEP determinations.

Regional Planning Agencies

Opportunity. Regional planning agencies and commissions may be formed to oversee and coordinate development within a given planning region. The oversight function of these agencies may serve to control development in designated areas where such development would be inconsistent with the maintenance of instream flows.

Background. CGSA § 8-31a provides that "within any planning region of the state . . . regional planning agenc(ies) may be created by . . . ordinance of the legislative bodies of two or more towns, cities, or boroughs within such region" The primary function of these planning agencies is to make a regional plan for development, including land uses, municipal services, transportation routes and hubs, and educational institutions in order "to promote with the greatest efficiency and economy the coordinated development of its area and the general welfare and prosperity of its people" (CGSA § 8-35a).

In addition, Connecticut has recently passed legislation providing for the formation of River Protection Commissions, to be composed of representatives from municipalities, with DEP oversight. These commissions are to serve as advisory boards and planning and management agencies, with jurisdiction over "protected river corridors," considered "worthy of permanent protection, preservation, and resource management because of environmental, historic, hydrologic, ecologic, agricultural or recreational qualities" (CGSA § 25-102pp, see generally CGSA §§ 25-102pp through 25-102VV). No river protection commissions have yet been formed under these provisions.

Example. The Connecticut River Gateway Commission is a statutorily created regional planning agency designed to oversee and coordinate development within the Lower Connecticut River Conservation Zone. The zone includes portions of the towns of Old Saybrook, Essex, Deep River, Chester, Haddam, East Haddam, Lyme, and Old Lyme. The Commission is composed of representatives of each of these towns and representatives from the Mid-State Regional Planning Agency, the Connecticut River Estuary Regional Planning Agency, and DEP (CGSA § 25-102e).

The Commission is given authority to review the zoning regulations of the towns to insure that no actions will be permitted which "would detract from the natural riverway scene" (CGSA § 25-102g). In addition, all applications with respect to lands within the conservation zone submitted to individual town zoning boards must be reviewed by the Commission to determine consistency with the maintenance of the conservation zone (CGSA § 22a-102h).

The DEP, with the approval of the Commission, is charged with the acquisition of scenic easements and development rights to further the preservation and enhancement of the conservation zone. Such easements and rights are to be acquired with funds generated by bonds specifically authorized for these purposes.

Evaluation. The maintenance of a "natural riverway scene" necessarily requires sufficient instream flow to maintain that riverway. Thus, the Connecticut River Gateway Commission exemplifies how a regional planning agency may insure controlled development within its jurisdiction, with a focus on the protection of the scenic and ecological values that unimpaired stream-flows represent.

Note: Some information in this section was provided by personal communication with the following people:

M.A. Dickenson, Connecticut Department of Environmental Protection, Coastal Area Management, January 26, 1987.

C. Recchia, Connecticut Department of Environmental Protection Coastal Area Management, January 26, 1987.

INTERSTATE COMPACTS AND LITIGATION

The flow of Connecticut's water into neighboring States and, in turn, the flows from other States into Connecticut necessitate interstate agreements, known as compacts, to protect both the rights of individual States, and the waters that flow between them. Connecticut is a party to a number of these compacts, most of which establish interstate commissions to carry out the compacts' purposes. These commissions have the planning authority, and sometimes the regulatory authority, needed to achieve their goals. When compacts fail, or cannot be reached, interstate litigation serves as a means of protecting Connecticut's interests.

Interstate Litigation

Opportunity. The Connecticut Attorney General's authority to litigate to protect the State from damages to streams, caused by diversions or other interferences emanating from beyond Connecticut's borders, represents a significant opportunity by which streamflows may be allocated, augmented, and protected.

Background. Article I, § 10, Clause 3 of the U.S. Constitution requires that "no state shall, without the consent of Congress, . . . enter into any agreement or compact with another state or foreign power" Article III, paragraph 2, Clause 1 gives the U.S. Supreme Court "original jurisdiction" (jurisdiction to hear the case as a trial court, without the necessity of a lengthy appeals process) over controversies between the States, a second method of dispute resolution. A third means by which an interstate water dispute might be settled is by Congressional apportionment (see for example, 43 U.S.C. §§ 617-618 (1976 and Supp. IV 1980), where the waters of the lower Colorado River were Congressionally apportioned by the Boulder Canyon Project Act). "In the absence of congressional apportionment of an interstate stream, states with conflicting interests have only two avenues available through which to achieve a permanent resolution of their disagreement: Interstate Compact and litigation" [Stephenson, Interstate Rights to the Waters of the Connecticut River, Issues Raised by the Proposed Northfield Diversion, 4 W. NELR 641, 644 (1982)].

In recognition of these limitations, the Connecticut Attorney General is authorized to follow three courses: (1) negotiate and contract in the name of the State of Connecticut with any other State or agent thereof, for the use, allocation, and diversion of waters that flow through the State (CGSA § 3-127); (2) enter into interstate compacts, with Congressional approval, regarding uses and allocations of interstate waters (CGSA §§ 25-3, 25-4); and, if necessary (3) "take such action as is deemed necessary to protect the state from damage by diversion or other interference from streams without the state

which enter or are tributary to streams flowing within the state" (CGSA § 3-126).

The U.S. Supreme Court allocates interstate waters based on the rule of "equitable apportionment." Under this rule State water laws do not control, though they are taken into account. Instead,

such disputes are to be settled on the basis of equality of right. But this is not to say that there must be an equal division of the waters of an interstate stream among the states through which it flows. It means that the principles of right and equity shall be applied having regard to the "equal level or plane on which all states stand, in point of power and right, under our constitutional system" and that, upon a consideration of the pertinent laws of the contending states and all other relevant facts, this court will determine what is an equitable apportionment of the use of such waters. [State of Connecticut v. Commonwealth of Massachusetts, 282 U.S. 660, 51 S.Ct. 286 (1931)].

Example. In Connecticut v. Massachusetts, cited above, Connecticut brought an action against Massachusetts over that State's proposed diversion of waters of the Ware and Swift Rivers, seeking to enjoin such diversion on the basis of alleged interference with the rights of Connecticut's riparian landowners, as well as harm to electric power facilities, floodplains, and the navigability of the river. The Supreme Court appointed a special master to compile the factual evidence necessary to decide the case, and to make recommendations thereon. The special master found that the recommendations of the Secretary of War (now the Secretary of Defense, who oversees actions of the Army Corps of Engineers), which included the maintenance of instream flows of 20 million gallons per day, were adequate to protect the rights of Connecticut's landowners. The Supreme Court upheld the findings of the special master, ruling that Connecticut failed to prove by "clear and convincing evidence" that the proposed diversion was of "serious magnitude" [282 U.S. at 669; 51 S.Ct. at 289]. The Court's final decree, however, placed an affirmative obligation on Massachusetts to abide by the limits imposed on the diversion, and granted Connecticut the right to renew its objections if its "substantial interests" were threatened by a "material increase" that would violate these limits [Connecticut v. Massachusetts, 283 U.S. 789 (1931) (decree); Stephenson, *supra*, 4 W. NELR at 662].

Evaluation. If such a case were to arise today, environmental and ecological factors--including water quality and quantity considerations, waste management impacts, fisheries, endangered species, and flood control--could become the core of any argument to prevent an out-of-State diversion.

In the past, the Supreme Court's analysis of interstate water diversion cases has been devoid of ecological considerations. The cases, however, were all decided before 1946 and, in the present era, the vulnerability of life forms and of the food chain to human interference may be more effectively raised before a court than in the past. In addition, the nation is

now statutorily committed to protecting all forms of life and preserving ecological balance. As with any modern technology, water diversions can disrupt the lives of both primitive and complex organisms. The intensity and breadth of any such disruptions, if demonstrable by objective evidence, could become a focal issue in a suit to block an out-of-state diversion, because of heightened awareness of ecological impacts. [Stephenson, supra, at 673].

Such considerations, in the context of interstate water litigation, could provide the basis of a precedential Supreme Court decision specific to the protection of instream flows in Connecticut.

Interstate Compacts

Opportunity. Connecticut's participation in interstate compact commissions provides an opportunity for interstate planning for a variety of streamflow-related activities. Such planning, coupled with regulatory authority in certain instances, represents a means by which Connecticut's interests, including the maintenance of instream flows, can be protected and enhanced, without the necessity of resorting to interstate litigation.

Background. Connecticut is the signatory to six interstate compacts covering various water quality and quantity issues. These compacts include the New England Water Pollution Control Compact (CGSA § 22a-309), the Interstate Sanitation Commission Tri-State Compact (CGSA § 22a-294), the Northeastern Water and Related Land Resources Compact (CGSA § 25-121), the Connecticut River Flood Control Compact (CGSA § 25-99), the Thames River Valley Flood Control Compact (§ 25-101), and the Connecticut River Atlantic Salmon Compact (§ 26-302).

These compacts create interstate commissions to promote the comprehensive planning of dams and reservoirs (Connecticut River and Thames River flood control compacts), discharges of sewage and other pollutants into interstate waters (Interstate Sanitation Commission and New England Water Pollution Control compacts), use water resources (Northeastern Water and Related Land Resources Compact) and management of the Atlantic salmon (Connecticut River Atlantic Salmon Compact). Two of the compacts, the Sanitation Commission Tri-State Compact, entered into with New York and New Jersey, and the Connecticut River Atlantic Salmon Compact, with Massachusetts, New Hampshire, and Vermont, give the commissions regulatory and enforcement authority over activities and geographic areas specified in the compacts. Where no regulatory authority exists, the roles of the compact commissions are generally advisory.

Examples. The Connecticut River Atlantic Salmon Commission comprises two members from each signatory State (Connecticut, Massachusetts, New Hampshire, and Vermont), one a member of the agency charged with fisheries management (DEP in Connecticut), and the other a member of the public, appointed by the Governor, "who shall have knowledge of and interest in Atlantic salmon" (CGSA § 26-302, Article II). The Regional Directors of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service are also members.

The Commission has drafted regulations for the taking of Atlantic salmon that have been adopted by all four signatory States (see, for example, CAR § 26-112-45(c)(4)). The regulations set limits on places, times, quantities, and require a special license for the taking of Atlantic salmon. Through these efforts, the number of salmon returning to the Connecticut River has steadily increased. The maintenance of the salmon fishery necessitates preservation of streamflow sufficient to maintain the salmon's habitat. Interstate planning and regulation to protect the fishery may therefore also enhance instream flows.

Powers of the Interstate Sanitation Commission, established by the Interstate Sanitation Commission Tri-state Compact, include the establishment of minimum effluent treatment standards for discharges into the waters flowing into and out of New York Harbor and Long Island Sound. In addition, the commission may order compliance with regulations and take enforcement action as necessary (see CGSA §§ 22a-294; 297). Given that water quality is often directly related to the maintenance of instream flows (see earlier discussion of "Water Quality"), the regulatory authority of the Interstate Sanitation Commission provides another avenue by which instream flow considerations may be addressed.

Evaluation. The effectiveness of interstate compact commissions is limited by both the regulatory authority granted them by compact, and the extent to which individual member States adopt the commissions' prescriptions, guidelines, and regulations. Commissions with regulatory authority are likely to have more impact on streamflow maintenance than those with merely advisory powers. The advisory commissions, however, may be effective in mediating disputes which may arise over the use of interstate streams. In this manner, resort to interstate litigation, and the expense and interstate animosity that such litigation may engender, may be avoided.

PRIVATE RIGHTS OF ACTION

Private citizens and public interest groups have many opportunities, under both the common law and statute, to bring direct actions to preserve and abate obstructions of instream flows. In addition, certain statutory provisions enable citizens to specifically petition DEP to take action to preserve or protect instream flow values.

Common law causes of action include public and private nuisance actions, as well as actions to abate interferences with riparian rights. Riparian rights are not discussed in this section, as they have been previously addressed elsewhere (see "Riparian Rights/Navigational Servitude" section; and Colleens v. New Canaan Water Co., discussed in "Groundwater" section). Additional common law causes of action exist under the emerging "public trust doctrine." Opportunities under the public trust doctrine are addressed elsewhere in this paper.

A number of statutorily conferred opportunities in Connecticut include the right to petition DEP to abate a nuisance under the Coastal Management Act, the right to petition for a fishway under the Fishway Statute (CGSA

§ 26-136), and statutory provisions that provide "standing" to citizens to sue to preserve environmental values.

Nuisance Actions

Opportunity. Private actions may be filed to abate public and private nuisances which impair instream flows.

Background. Nuisance actions are of two types, public and private. "A private nuisance is a nontrespassory invasion of another's interest in the private use and enjoyment of land" (Restatement 2d of Torts, § 821D). Thus, to bring an action for private nuisance, a physical trespass onto plaintiff's property need not occur. However, to recover in a private nuisance action, one must have some degree of title or interest in the land that was interfered with. Remedies for private nuisances may include both damages for the reduction in value of land, and mandatory injunctive relieve to remove the cause of the damage [*Kloter v. Carbetta Enterprises, Inc.*, 3 Conn. Supp. 103, 485 Atl.2d 582 (Conn. App. 1985), cert. denied, 195 Conn. 803, 491 Atl.2d 1103 (1985)].

The Restatement 2d of Torts § 821B defines public nuisance:

- (1) A public nuisance is an unreasonable interference with a right common to the general public.
- (2) Circumstances that may sustain a holding that an interference with a public right is unreasonable include the following:
 - (a) whether the conduct involves a significant interference with the public health, the public safety, the public peace, the public comfort, or the public convenience; or
 - (b) whether the conduct is proscribed by a statute, ordinance, or administrative regulation; or
 - (c) whether the conduct is of a continuing nature or has produced a permanent or long-lasting effect, and, as the actor knows or has reason to know, has a significant effect upon the public right.

Under CGSA § 22a-109 of the Coastal Management Act, any activity not exempted from coastal-site plan review provisions, which has not received lawful approval from a municipal commission or which is in violation of the terms and conditions of such approval, will be deemed a public nuisance. Should DEP fail to take action to abate this nuisance, a petition signed by 25 residents of the municipality submitted to DEP will initiate an investigation to determine whether the activity complained of does indeed constitute a public nuisance. The DEP must respond to this petition in writing within 90 days. Thus, another opportunity exists for citizens of coastal communities to take action to abate activities that might obstruct instream flows.

Examples. Connecticut has long recognized that the obstruction of a watercourse may constitute a nuisance (CGSA § 19a-336):

If any person unlawfully dams or obstructs a watercourse to the special damage of another, such diversion or obstruction shall be a common nuisance and may be abated as such. Any person who violates any provision of this section shall be fined not more than seven dollars, and each week that such nuisance continues shall be a separate offense. If any person removes or injures a mill dam which is not a nuisance, he shall pay to the party injured double damages and double costs.

Thus, in Rau v. Urban [113 Conn. 402, 155 Atl.498 (1931)], defendants were required by the Court to abate an obstruction to a watercourse caused by actions of defendant's predecessors in interest. In this manner, instream flows were protected.

The case of Dingwell v. Town of Litchfield [4 Conn. App. 621, 496 Atl.2d 213 (1985)] is exemplary of a private action to abate what would be considered a public nuisance. Dingwell involved an action for injunction and damages against a town-operated landfill that was polluting plaintiff's wells. "The well was found to be contaminated by leachate, an inevitable by-product of landfill operations" [496 Atl.2d at 215]. During the pendency of the action, DEP had issued an abatement order as well. The Supreme Court found that the factual elements necessary to establish a nuisance had been met, thus upholding the trial court's injunction decree. The protection of plaintiff's groundwater undoubtedly helped protect instream flows as well.

Evaluation. Nuisance actions, based on both common law and statute, serve as an important means by which individual rights to the maintenance of instream flows may be protected. Coupled with the statutory rights discussed in the following opportunity, individual citizens have strong legal bases by which to challenge actions that would impair instream flows.

Citizens Suits

Opportunity. The open standing provisions of the Connecticut Environmental Protection Act allow citizens to challenge virtually any action in the State with potential for causing "unreasonable pollution," including pollution and impairment of streamflows.

Background. In order for any person to maintain an action in court, he or she must have "standing" to sue. At common law, a showing of standing required a showing of actual or threatened injury, distinct from any incidental injury that might befall a person as a member of the "general public."

No one is entitled to set the machinery of the courts in motion unless it be for the purpose of obtaining redress for an injury he has suffered or to prevent an injury he may suffer, either in an individual or representative capacity. [Gannon v. Sanders, 157 Conn. 1, 244 Atl.2d 397 (1968)].

Thus, standing has traditionally stood as a barrier to anyone whose property was not directly injured by an action that might impair stream flow. [See, for example, Belford v. City of New Haven, 170 Conn. 46, 364 Atl.2d 194 (1975)]. The enactment of the Connecticut Environmental Protection Act (CEPA)

and the Connecticut Supreme Court's decision in Manchester Environmental Coalition v. Stockton have eliminated this barrier.

The Connecticut Environmental Protection Act (CGSA §§ 22a-14 through 20) establishes a "public trust in the air, water and other natural resources of the State of Connecticut," further declaring that "each person is entitled to the protection, preservation, and enhancement of the same" (CGSA § 22a-15). To accomplish this, § 22a-16 of the Act provides that any person, corporation, political subdivision, or legal entity of any type, may maintain an action in district court, against any other person or entity, "for the protection of the public trust in the air, water, and other natural resources of the state from unreasonable pollution, impairment, or destruction."

Example. The Connecticut Supreme Court reviewed this provision in Manchester Environmental Coalition v. Stockton [184 Conn. 51, 441 Atl.2d 68 (1981)], which involved an action by plaintiffs to force the Commissioner of Commerce to withhold a decision on permitting the construction of an industrial park, pending completion of an environmental impact statement (EIS). The project was approved before completion of that statement. Plaintiffs brought an action seeking a declaratory judgment, and temporary and permanent injunctions against the Commissioner. The first issue reviewed by the court was the defendant's claim that plaintiffs lacked standing to bring the action. Construing CGSA § 22a-16, the Supreme Court held that "standing is automatically granted under the EPA to any person. The plaintiffs need not prove any pollution, impairment, or destruction of the environment in order to have standing" [441 Atl.2d at 74].

The court then went on to rule on what constitutes "unreasonable pollution" under the act. Although this question is necessarily factual, the court did establish the following guideline.

A person may be polluting the environment, but his pollution alone may not be unreasonable. But when his pollution is introduced into the environment in combination with others, it may become unreasonable.

Evaluation. The Connecticut Environmental Protection Act and the Manchester decision represent a substantial means by which individual citizens and public interest groups may challenge both State and private actions that pose a threat to instream flows in Connecticut. If the citizens can prove that streamflow impairment constitutes "unreasonable pollution," they may force reconsideration and revision of that action.

THE PUBLIC TRUST DOCTRINE

by

George A. Gould
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INTRODUCTION

Stated simply and very generally, the public trust doctrine expresses the concept that a State owns or holds certain resources "in trust" for the public. That is, the State owns these resources not as a "proprietor," but as a "trustee." Consequently, the State is not free to deal with a trust resource as it might deal with other State property, such as an office building; rather, the trust imposes duties and limitations on the State with regard to the use of the resource. More specifically, these duties and limitations become important when the State conveys the resource to private parties or creates private rights in it.

The public trust doctrine has particular relevance for the protection of instream flows because, as discussed below, historically the doctrine has been concerned with the protection of public rights in waters. Nevertheless, the doctrine is not a panacea. It is not recognized in all jurisdictions, and the effect of the doctrine varies greatly where recognized. The doctrine has substantial limitations, even in those jurisdictions that have embraced it most enthusiastically. Furthermore, the doctrine is a developing one; in no State is it fully fleshed-out. As in all developing common-law (judge-made) doctrines, courts borrow heavily, but selectively, from other jurisdictions, making results unpredictable. The subsequent discussion sets forth the doctrine, followed by a discussion of the doctrine's application in New Hampshire and Connecticut.

NAVIGABLE WATERS

Before examining the public trust doctrine, a bit of explanation concerning navigable waters is in order, because of the doctrine's traditional association with navigable waters. The concept of navigation serves several functions in American jurisprudence, and the definition or criteria used to determine navigability frequently vary, depending on the function that is being served. Nevertheless, a determination that a body of water is navigable is essentially a determination that it is a "public," as opposed to a "private," body of water. In effect, this means that the general public has the right to use that body of water for some purposes.

The special importance of navigable waters may be difficult to appreciate today. Such waters, however, were the principal means of commerce and travel until this century. Consequently, the policy of preserving them as open public highways is certainly understandable in a historical context.

Under English common law, the Crown "owned" navigable bodies of water. When the American colonies gained their independence from England, they succeeded to the ownership of the beds of navigable waters as successors in interest to the Crown. Moreover, the United States Supreme Court held that new States admitted to the Union became the owner of the beds of navigable bodies of water within their boundaries under the "equal footing" doctrine.

American "federalism" further complicates the matter. Although the States succeeded to ownership of the beds, the Federal Government retained paramount control over the use of interstate waters pursuant to its powers over interstate commerce. This paramount control is typically called the "navigation servitude." While both the navigation servitude and the public trust doctrine have roots in the concept of navigability and to some extent represent similar concerns, the two are not to be confused. Of major significance, the navigation servitude has not been construed to impose any duties on the Federal Government or limitation on the uses that the Federal Government authorizes others to make of navigable waters. A detailed examination of the navigation servitude is beyond the scope of this discussion. The servitude is mentioned here principally for purposes of completeness.

DEVELOPMENT OF THE PUBLIC TRUST DOCTRINE--THE ILLINOIS CENTRAL RAILROAD CASE

Some legal scholars have traced the public trust doctrine to Roman law of the Emperor Justinian or to English common law. Other scholars have expressed doubt that the doctrine was a part of the law of Rome or of England, at least not in a form that bears a resemblance to the current doctrine. All scholars agree, however, that American origins of the doctrine are found in the case of Illinois Central Railroad v. State of Illinois [146 U.S. 387 (1892)], decided by the United States Supreme Court in 1892. Even today, courts frequently refer to this case when discussing the doctrine. Thus, it merits examination in some detail.

The Illinois Central case resulted from a statute enacted by the Illinois legislature in 1869 that gave 1,000 acres of the bed of Lake Michigan, composing almost the entire Chicago waterfront, to the railroad. Four years later the legislature thought better of the matter and repealed the statute. As could be expected, the railroad asserted that the legislature had no right to take back the waterfront. The United States Supreme Court, however, upheld the legislature's right to revoke the grant. The Court stated that the State's title to lands under a navigable body of water was different in character from its title to lands that the State held for sale. The title to these lands, the Court said, was held "in trust for the people of the State that they may carry on commerce over them, and have liberty of fishing therein, freed from the obstruction or interference of private parties."

As has often been the case where the public trust doctrine is involved, the Illinois Central decision raises more questions than it answers. The

decision makes it clear, however, that a State is prohibited from conveying absolute title to the bed of a navigable body of water or, at least, having made such a conveyance, is permitted to revoke its conveyance, in some cases. The underlined words in the prior sentence emphasize that the Court did not invalidate all conveyances of trust property. The Court expressly stated that grants of lands for wharves, piers, docks and other structures in aid of commerce, and grants that do not impair the public interest in the lands and waters remaining are valid.

One other aspect of the decision merits discussion at this point: its impact, or lack thereof, on the Illinois treasury. Even without the public trust doctrine, the legislature could have taken back the waterfront through an exercise of the power of eminent domain. By finding that the grant was revocable, however, the Supreme Court permitted the legislature to reacquire the tract without exercising the power of eminent domain and without complying with its attendant requirement to pay compensation to the railroad. The potential to avoid the payment of compensation, because there has been no "taking" of property, is an attractive feature of the public trust doctrine.

For many years following the Illinois Central decision, the public trust doctrine remained an arcane body of law that dealt only with the beds of navigable bodies of water. Moreover, it was principally a "land use" doctrine, rather than a water law doctrine. That is, it dealt with the beds of navigable waters and not with the waters themselves. In recent years, however, the doctrine has experienced a major expansion. A variety of new resources and new uses have been encompassed within the doctrine, and the doctrine has been seen as a major device in efforts to protect the environment. Nevertheless, the doctrine remains closely tied to navigable waters in most jurisdictions.

STATE LAW OR FEDERAL LAW?

The source of law applied in Illinois Central was not made clear by the Court. One might suppose in reading the opinion that the Court was applying Federal law, perhaps even Federal constitutional law. In a later case, Appleby v. City of New York [271 U.S. 364 (1926)], however, the Court stated that the Illinois Central decision was based on Illinois law, not Federal law, although it did not identify any particular Illinois constitutional provision, State statute, or common law rule. In any case, today it is generally assumed that the public trust doctrine is a matter of State law. Thus, the doctrine is not a single uniform body of law binding on all States; rather, each State is free to reject the doctrine or to accept it in whatever form the State chooses.

PROPERTY SUBJECT TO THE TRUST

As noted above, historically the public trust doctrine applied only to the beds of navigable waters. Recent decisions have extended it to other resources, such as beaches, parks, and even "all natural resources." For instream flow purposes, however, only two extensions are important: extension of the waters subject to the doctrine and extension of the trust to the water itself, rather than just the beds of water.

Under the equal footing doctrine, a State received title to the beds of waters that were "navigable in fact" at the time the State was admitted to the Union. The Supreme Court has said that waters are "navigable in fact" if they are used, or susceptible of being used, in their ordinary condition, as highways for trade or travel [The Daniel Ball, 77 U.S. 557 (1871)], a much more liberal definition than the English definition, which restricts navigability to waters that are subject to the ebb and flow of the tide. Many States, however, adopted even more liberal tests of navigability, such as the "pleasure boat test." Because navigability for purposes of determining title to the beds of watercourses is a question of Federal law, a State owns only the beds of waters that are navigable under a Federal test; nevertheless, the public trust doctrine has usually been extended to waters navigable under more liberal State tests.

The first indication that the public trust doctrine applied to the water itself occurred in a 1976 decision, United Plainsmen Ass'n v. North Dakota State Water Conservation Comm. [247 N.W.2d 457 (1976)]. That decision, however, was rather narrow in scope, holding only that the North Dakota State Water Conservation Commission must engage in water planning to determine the effects of allocation on present water supplies and future water needs before it could issue permits for the appropriation of water.

The principal decision on this issue is the "Mono Lake" case, National Audubon Society v. Superior Court of Alpine County [89 Cal.Rptr. 346 (1983)]. In this case, the Audubon Society argued that the diversion of water by the City of Los Angeles from four of the five tributaries supplying Mono Lake was causing extensive environmental damage to the lake and was in violation of the public trust doctrine. Los Angeles replied that it had a permit from the State of California, issued in 1940, which authorized these diversions. It further argued that the public trust doctrine had been completely subsumed by the California water rights statutes. The California Supreme Court disagreed, holding that consumptive water rights are subject to the public trust doctrine. The court further held that because the effects of these diversions on a trust resource, Mono Lake, had not been considered when the permits were issued in 1940, it was proper to consider them now.

The decision further expanded the scope of the doctrine by holding that it could be applied to water in nonnavigable tributaries, to prevent harm to navigable bodies of water. The court expressly refused, however, to consider whether the doctrine might extend to nonnavigable tributaries themselves.

TRUST PURPOSES

Historically, the public trust doctrine protected the public's rights to use navigable waters for navigation, commerce, and fishing. Recent decisions, however, have expanded the protection to all sorts of water-related activities, including hunting, swimming, rafting, boating, and bathing, and even to preserve tidelands "in their natural state so that they may serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life, and which favorably affect the scenery and climate of the area" [National Audubon Society, *supra*]. On the other hand, in the case just cited the California Supreme Court limited trust

purposes to activities "in the vicinity" of trust waters and refused to extend the trust to all "public uses," stating that if this were done the doctrine would, as a practical matter, impose no restrictions on the State's allocation of trust property. Some courts, however, have simply equated trust purposes with "public purposes" thereby effectively emasculating the doctrine.

LIMITATIONS IMPOSED BY THE PUBLIC TRUST DOCTRINE

In some cases, the public trust doctrine appears to be primarily a procedural device. One of the leading advocates of the doctrine, Professor Joseph Sax, emphasized its procedural nature as a device for correcting imperfections in the democratic process. As Sax explained it, misallocation of resources sometimes occurs because a small, well-organized minority takes advantage of a diffused, disorganized majority. Courts apply the doctrine to prevent misallocation, typically by referring the decision to a governmental body with a more broadly based constituency, perhaps even the legislature itself (See Sax, "The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention," 68 Mich. L. Rev. 471 (1970)). For example, courts have held that a grant by an administrative body that is contrary to a trust purpose is not valid unless it is supported by clear statutory authority. This has the effect of requiring legislative approval for any grant of trust resources for which there is not clear statutory authority. Another approach reverses the usual presumption of administrative regularity where a decision contrary to the public trust is involved, thus placing the burden on the agency to show that it acted in accordance with law.

On the other hand, the public trust has frequently been given substantive content, as it was in Illinois Central. That decision indicates that the State of Illinois cannot convey the Chicago waterfront absolutely and irrevocably, no matter what the procedure involved. Even where given a substantive effect, however, the doctrine does not invalidate all grants of trust property. Building on themes developed by the Supreme Court in Illinois Central, courts have held that those grants that carry out trust purposes or that do not substantially impair trust purposes are valid. A related approach holds that a grant of trust property conveys title, but the property remains subject to a "servitude," which prohibits the use of the property in a manner that is inconsistent with trust purposes, and which permits the State to subject the property to trust uses at some time in the future. Still another approach is to require that the trust purposes be carefully considered and negative effects minimized when making grants of trust property.

Because the effect of the public trust doctrine on consumptive water rights is of particular importance where instream values are concerned, the Mono Lake decision merits further examination. In that decision, the court acknowledged that the appropriation and diversion of water "does not promote, and may unavoidably harm, the trust uses at the source stream." The court also acknowledged, however, the importance of the appropriation of water to the population and economy of the State. Consequently, in an effort to accommodate water use and the public trust doctrine, the court held that the State "has an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible."

The formula that the California Supreme Court articulated essentially imposes a balancing test in which the State's need to appropriate and divert water is weighed against trust purposes on a case-by-case basis. As such, the doctrine appears to be little different than California's longstanding requirement that the Water Resources Control Board consider the "public interest" when granting permits for the appropriation of water; however, it differs from the requirement in two important respects. First, according to the court, the public trust doctrine imposes on the State a duty of continuing supervision over the appropriation and use of water. Thus, the State is not confined by past allocation decisions but has the power and the responsibility periodically to reconsider the effect of existing appropriations on trust resources and values and to require adjustments in existing uses to protect trust purposes where appropriate. Second, the State is apparently powerless to dispense with its trust obligations, unlike its power to legislatively repeal statutes requiring the Water Resources Control Board to consider the public interest.

APPLICATION OF THE PUBLIC TRUST DOCTRINE

The identification of a resource as a trust resource and the determination that a particular activity is protected by the doctrine is only the first step. The next step is to determine what legal significance this has. As an initial matter, it appears that the public trust doctrine is significant in two general ways. First, it may provide a legal basis for State regulation of a resource. Second, it may provide grounds for challenging the actions of the State or a private party.

As to the first area, the public trust doctrine would not seem to be an important source of State power to regulate for the purpose of protecting instream values. Modern interpretations of the "police power" of States probably provide a sufficient basis for such regulation. Furthermore, in western States, constitutional or statutory enactments creating State or public "ownership" of water provide an additional basis for State regulation. Nevertheless, in a case where regulation is questionable, the public trust doctrine might provide an additional argument for upholding regulation. For example, if a State with a very strong constitutional tradition for the appropriation of water by private persons were to enact legislation providing for instream flow protection of some sort, the public trust doctrine might be relied on, at least in part, as authority for the legislation.

The doctrine could aid State regulation in one additional way. A regulatory scheme that imposes new limitations or requirements on existing water rights, such as a statute requiring all irrigators to take specified steps to conserve water, may be attacked as an unconstitutional "taking" of property. As discussed below, however, the public trust doctrine usually avoids the taking issue. Consequently, it could provide a judicial rationale for upholding such regulation in the face of a constitutional attack.

Historically, the public trust doctrine has been used principally for the second purpose, that is, to challenge the actions of the State (State agencies) or private parties with regard to trust resources. Modern developments in administrative law, such as liberal "standing" rules and the "hard look" standard of judicial review, may have rendered the public trust doctrine

largely superfluous where State action is challenged, although the doctrine may provide a basis for imposing substantive duties or limitations (e.g., United Plainsmen Ass'n, supra) on a State agency in a few cases.

The doctrine's greatest impact has been in cases challenging private parties. The challenge may be raised by another private party, as was done in Mono Lake, or it may be raised by the State, as was done in Illinois Central. The private party who holds title to the trust property will normally assert that his title is "vested" property that cannot be taken or diminished without the payment of compensation. The public trust doctrine, however, typically eliminates any obligation to pay compensation. The reasoning is that the title the private party received from the State was subject to a "limitation" in favor of the public. Thus, nothing is "taken" when the superior trust interest is asserted to terminate or diminish the private party's rights. As the California Supreme Court said in Mono Lake, a party "can claim no vested right to bar recognition of the trust or state action to carry out its purposes."

This power to apply the limitations of the public trust retroactively without a taking of property makes the doctrine a uniquely powerful tool. Because of the doctrine, the State of Illinois was able to take back the Chicago waterfront without payment of compensation. Similarly, water rights granted to Los Angeles 45 years ago may be terminated or limited to protect Mono Lake, without the payment of compensation.

THE PUBLIC TRUST DOCTRINE AND INSTREAM FLOWS

The public trust doctrine has many potential applications as a strategy for preserving instream flows.

1. The doctrine might form the basis for an argument that a State water rights agency is required to consider the effect of a proposed appropriation on instream values before granting a permit authorizing the appropriation. This strategy could be particularly important in a State that does not have a statute requiring the agency to consider the "public interest" when granting permits, or in a State where the "public interest" does not include consideration of environmental values.
2. As a variation on example 1, the doctrine might be used as the basis for requiring the adoption of alternatives that maximize the use of existing diversions before granting new appropriations. For example, a municipality might be required to engage in recycling and conservation before being permitted to make new appropriations.
3. The doctrine might be used to prevent the destruction of aquatic habitat. For example, a stream channelization project might be prohibited because it violates the public trust.
4. The doctrine could be used to terminate or limit existing water uses that are particularly harmful to instream values, as may be done in Mono Lake.

5. The doctrine might be used as the legal basis for legislation creating a statewide program of water conservation.

In assessing the effectiveness of the doctrine in the above situations or in other situations, the many limitations of the doctrine discussed above must be considered. For example, if a particular State applies the doctrine only to the beds of watercourses that are navigable under the Federal test, or if it limits the trust to traditional purposes, such as commerce, the doctrine may be of little use in protecting instream flows. Furthermore, in many jurisdictions it will be impossible to ascertain the state of the law because there are no decisions, or perhaps only a single limited decision, addressing the doctrine.

THE PUBLIC TRUST DOCTRINE IN NEW HAMPSHIRE AND CONNECTICUT

Both New Hampshire and Connecticut acknowledge that the State holds tidelands and the beds beneath navigable waters in trust for the benefit of the public. However, unlike the courts of such States as California and Massachusetts, which have expanded the scope of the public trust doctrine, those of New Hampshire and Connecticut appear to have confined the doctrine to its traditional limits.

New Hampshire

Because of New Hampshire's geographical location, most of the public trust doctrine cases in that State have involved freshwater lakes and stream, rather than tidelands. One of the leading decisions in New Hampshire is Concord Manufacturing Co. v. Robertson [66 N.H. 1, 25 Atl. 718 (1890)]. In that case, a mill owner sued to prevent an ice company from removing ice from a nearby pond. The mill owner claimed that the defendant's actions reduced the flow of water into the stream on which the mill was located.

In order to determine the rights of the parties, the New Hampshire Supreme Court was required to consider whether the pond was privately owned or not. The court examined the history and development of the public trust doctrine in great detail and concluded that the beds of large ponds were normally held in trust for the benefit of the public and would not pass into private ownership by an ordinary conveyance from the State or its predecessor, the King. According to the court, express legislative authority was necessary to alienate trust lands.

The public right to navigate was at issue in Connecticut River Lumber Co. v. Olcott Falls Co. [65 N.H. 290, 21 Atl. 1090 (1890)]. The plaintiff in that case, a logging company, brought suit against the owner of a dam on the Connecticut River to require it to provide a sluiceway for the logs. The court declared that navigable waters were subject to a trust on behalf of the people of the State. The court refused to find that a grant by the State to construct the dam carried with it the right to obstruct navigation on the river. Instead, the court declared:

Acting as a body politic and trustee, the beneficiaries, by their legislative agents, can authorize an extinguishment of the trust and an abandonment of the trust estate . . . But there is a natural presumption that, if the legislature intended to do this, their purpose will be distinctly expressed. (65 N.H. at 388, 21 Atl. at 1096].

Accordingly, the New Hampshire Supreme Court remanded the case back to the trial court with directions to determine the location and dimensions of a sluiceway.

State v. Hutchings [79 N.H. 132, 105 Atl. 519 (1919)], involved a suit by the State to abate as a public nuisance a bridge that obstructed public navigation on a portion of Lake Winnepesaukee. The defendant claimed that the legislature had allowed him to impede public navigation, because in 1808 it had authorized the defendant's predecessor in title to maintain a bridge at that site. The original bridge had a clearance of eleven feet at high water; however, the present bridge was much lower. The trial court ordered the defendant to remove the bridge or to raise it to eleven feet.

On appeal, the New Hampshire Supreme Court held that no intent to derogate the right of public navigation would be presumed on the part of the legislature. Instead, the court assumed that legislative permission to maintain the bridge was subordinate to the rights of the public. Consequently, the court agreed that the bridge would have to be raised. Moreover, since a fifteen foot clearance was now necessary for public navigation, the court concluded that the defendant would have to raise the bridge to that height so that larger craft could pass under it.

The New Hampshire court, however, has distinguished between tidewaters and great ponds on one hand, and fresh water rivers and streams on the other. Specifically, the court has recognized that title to submerged lands beneath fresh water streams may be conveyed into private ownership, subject to the public right of navigation. Thus, the rights of private owners were upheld in New Hampshire Water Resources Board v. Lebanon Sand and Gravel, Inc. [108 N.H. 254, 233 Atl.2d 828 (1967)].

In that case, the State brought suit to recover compensation for gravel removed by the defendant from the bed of the Connecticut River. The defendant, a riparian owner, traced his title back to a 1741 grant from the colonial legislature. The defendant claimed that the grant gave him title to the bed of the river, not just to its banks. The court agreed with the defendant's position. According to the court, while the public had a superior right to use the river for navigation, floatage and fishery, the defendant owned the soil itself and, therefore, could remove sand and gravel from riverbed as long as he did not interfere with public navigation.

Connecticut

Most of Connecticut's public trust doctrine cases were concerned with rights to the shoreline along Long Island Sound. Church v. Meeker [34 Conn. 421 (1867)], one of the first public trust decisions in Connecticut, involved

a dispute over the right to remove seaweed from the shore of Long Island Sound. The owner of a narrow tract of land bounded by a tidal marsh brought a trespass action against the defendant for removing seaweed from the beach. In order to decide the case, the Connecticut Supreme Court inquired into the nature of the plaintiff's title.

The court examined the public trust doctrine as it existed in England and as it operated after the colonies became independent. The court observed that the King originally held title to the shore of the sea in trust for the public use. It also cited Martin v. Waddell [41 U.S. 367 (1842)], with approval for the proposition that the States succeeded to the King's interest and thereby held the foreshore in trust for the benefit of the public. Finally, the court concluded that the plaintiff owned the marsh, but not the beach and, therefore, could not assert an exclusive right to any seaweed that washed up on the shore.

A number of Connecticut cases have focused on the right of riparian or littoral owners to utilize the foreshore or to construct wharves or channels in order to obtain access to navigable waters. For example, in Town of Orange v. Resnick [94 Conn. 573, 109 Atl. 864 (1920)], the town of Orange attempted to enjoin the defendant from constructing a bathing pavilion on the beach area immediately adjacent to his littoral property.

The town did not claim that the defendant's activities were inconsistent with the concept of the public trust. Instead, it asserted a proprietary right to the foreshore based on a legislative grant. The grant in question authorized the town to construct a seawall along the low water line, fill in the enclosed tideland area, and convert it into a public park. The town argued that the defendant's pavilion interfered with its proposed park.

In response, the defendant claimed that he was merely exercising his riparian rights. The court agreed that riparian and littoral owners had an interest in the foreshore, subject only to the paramount rights of the public. The court characterized this right as a property interest:

Such a separable and assignable interest in the soil is evidently a species of property, and it has been expressly held that the "exclusive right to the soil between high and low water mark for the purpose of erecting wharves and stores thereon" is "property in the nature of realty--is in fact real estate. [94 Conn. at 581, 109 Atl. at 866].

Consequently, the court held that the town could not prevent the defendant from erecting his pavilion. According to the court, the legislative grant upon which the town relied did not allow it to take the defendant's property without paying just compensation.

The nature of riparian rights to the foreshore in Connecticut were further defined by the court in State v. Knowles-Lomard Co. [122 Conn. 263, 188 Atl. 275 (1936)]. In this case, the State sought to prevent a littoral owner from removing sand from the foreshore. The trial court held in favor of the State and the landowner appealed.

The Connecticut Supreme Court declared that both the public and the littoral owner possessed rights in the foreshore:

It is settled law in this state that the public, whose representative in the state, is the owner of the soil between high and low water marks upon navigable water where the tide ebbs and flows . . . The owner of the adjoining upland has certain exclusive yet qualified rights and privileges in the waters and submerged lands adjoining his upland. He has the exclusive privilege of wharfing out and erecting piers over and upon such soil and for the purpose of occupying and using it in any manner that does not interfere with navigation, and he may convey these privileges separately from the adjoining land. [122 Conn. at 265, 188 Atl. at 275-276]].

However, the court also noted that the fundamental riparian right, upon which all others depended, was the right of access. The exclusive franchise of reclamation and of wharfing out, therefore, was merely a means of exercising this right of access.

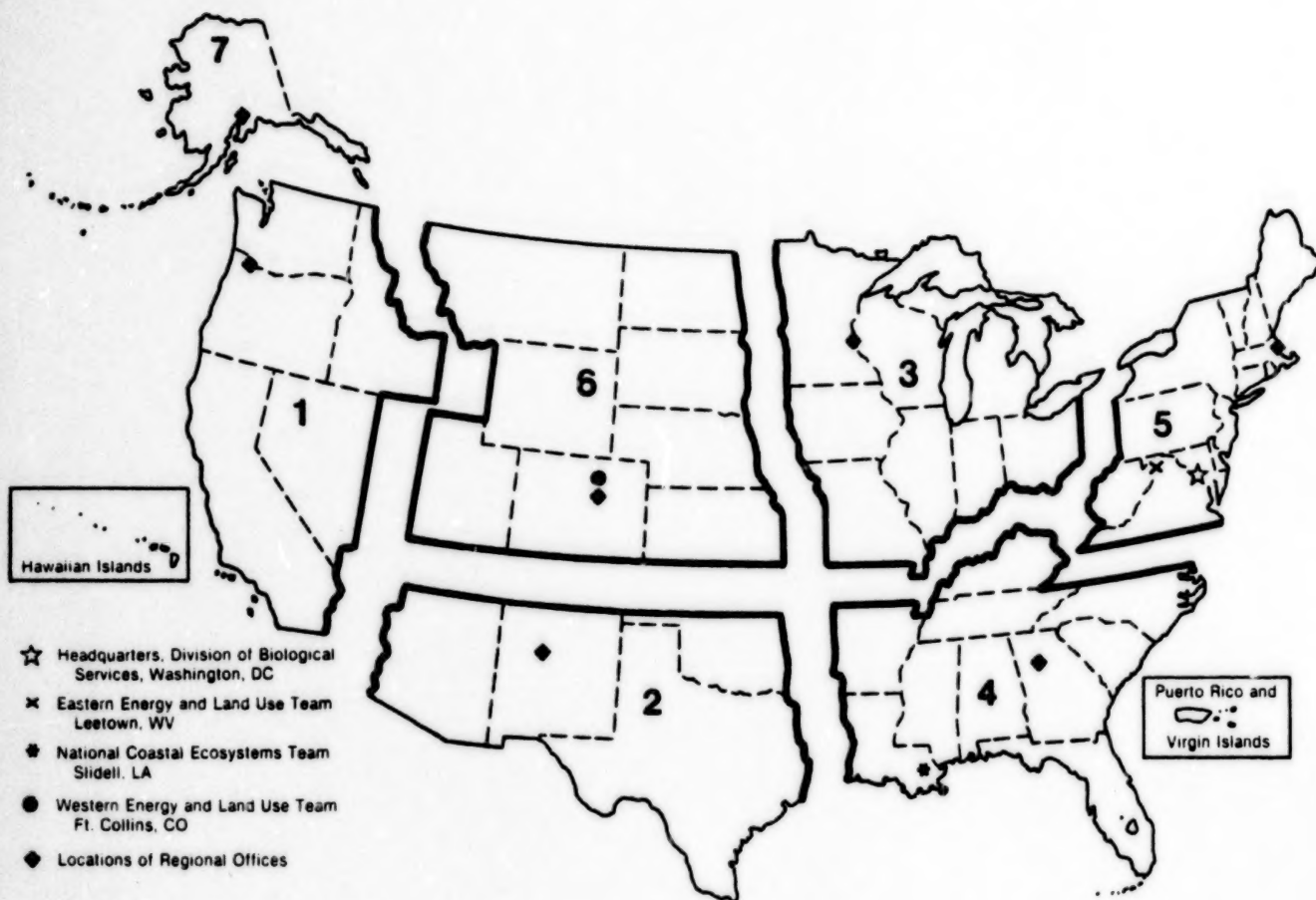
On the other hand, as the court observed, removing sand from the beach was not related in any way to the exercise of the riparian owner's right of access, but amounted to an assertion of ownership in the soil itself. Such a claim, in the court's opinion, was contrary to the public trust doctrine, which vested ownership in the soil of the foreshore in the State. Accordingly, the Connecticut Supreme Court affirmed the ruling of the lower court.

The riparian or littoral owner's interest in tidal areas was further qualified by the Connecticut Supreme Court in Shorehaven Golf Club, Inc. v. Water Resources Commission [146 Conn. 619, 153 Atl.2d 444 (1959)]. In that case, two littoral owners applied to the State Water Resources Commission for permission to dredge a channel in Long Island Sound to provide their land with access to navigable waters. The Commission denied this request because it found that the proposed dredging operation would cause environmental harm and because it concluded that the primary purpose of the operation was to obtain sand and gravel from the seabed to sell to commercial buyers.

The Commission's decision was upheld by the trial court. On appeal, the Connecticut Supreme Court also agreed with the Commission. The court acknowledged that the owner of land adjacent to tidal waters had an exclusive right to dig channels and to build wharves from his land to reach deep water so long as he did not interfere with public navigation. Nevertheless, the court concluded that this right was subject to reasonable regulation just like any other property right.

In this instance, the court found that the Commission was justified in denying the landowner's application because of its adverse effect on trust property. The court observed that the landowners were free to submit another proposal to the Commission that would not endanger the ecological integrity of the area.

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